Model GD-1157 Auto Intrusion Alarm

HEATH COMPANY

BENTON HARBOR, MICHIGAN

MODEL GD-1157 Auto Intrusion Alarm

HEATHKIT®

ASSEMBLY MANUAL

HEATHKIT®

Price $2.00

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I-595-1767

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During your first ninety (90) days of ownership, Heath Company will replace or repair free of charge — as soon as practical — any parts which are defective, either in materials or workmanship. You can obtain parts directly from Heath Company by writing us or telephoning us at (616) 982-3571. And we'll pay shipping charges to get those parts to you — anywhere in the world.

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HEATH COMPANY
BENTON HARBOR, MI. 49022

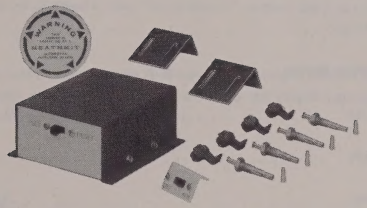
Prices and specifications subject to change without notice.

Assembly
and
Operation
of the

HEATHKIT

AUTO INTRUSION ALARM

MODEL GD-1157



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SPECIAL NOTICE

Read this before you proceed any further.

Because there are so many differences between the various makes and models, it would be impossible to give detailed instructions in this Manual for all automotive vehicles. Therefore, so you will have a better understanding of the type of installation problems that can occur, we suggest that you:

1. Refer to the "Installation" section of this Manual (Page 47) and read through the entire section.

2. Inspect your vehicle as you read. Look for possible mounting locations for door switches, switch brackets, locations to route wires, and for existing wires in your vehicle that you will use.

3. Decide what must be removed from your vehicle (carpet, carpet trim, upholstery panels, or rear seat) during the installation process.

4. As you read, and when you actually perform the steps later, use the sequence of steps in the "Installation" section only as a guide.

In the rare event that you can find no possible way to install the Auto Intrusion Alarm in your vehicle, you may return it to the Heath Company in its original packed condition for a full refund.

INTRODUCTION

The Heathkit Model GD-1157 is a solid-state automotive intrusion alarm that can be wired to the existing horn in your vehicle or to the optional Heathkit Siren Accessory for a high-level alarm.

The Alarm is triggered by hood, trunk, and door switches. It can be armed and disarmed by a dash-mounted switch and features adjustable delay times for exit and entry.

The GD-1157 has a rugged aluminum chassis and cabinet, and its compact size assures easy installation. It can be wired to existing door switches or custom wired to switches you may install to offer maximum protection for any type of vehicle.

Refer to the "Kit Builders Guide" for complete information on unpacking, parts identification, tools, wiring, soldering, and step-by-step assembly procedures.

ASSEMBLY NOTES

The illustrations in this Manual are called Pictorials and Details. Pictorials show the overall operation for a group of assembly steps; Details generally illustrate a single step. When you are directed to refer to a certain Pictorial "for the following steps," continue using that Pictorial until you are referred to another Pictorial for another group of steps.

All resistors will be called for by resistance values in Ω (ohms), kΩ (kilohms), or MΩ (megohms), and the corresponding color bands.

SAFETY WARNING: Avoid eye injury when you clip off excess lead lengths. Hold the leads as you clip them or at least clip the leads so they cannot fly toward your eyes.

TESTER

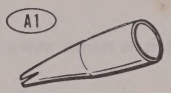
TESTER PARTS LIST

Locate the bag of parts labeled "Tester," and the roll of brown wire and the remaining parts in this parts list. Do not open the remaining parts at this time.

Check each part against the following list. Make a check (√) in the space provided as you identify each part.

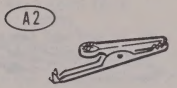
To order a replacement part, always include the PART NUMBER. Use the Parts Order Form furnished with this kit. If one is not available, see "Replacement Parts" inside the rear cover of this Manual. Your Warranty is located inside the front cover.

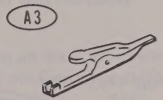
KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
A1 ( )	1	Clip insulator	73-34		.15
A2 ( )	2	Alligator clip	260-16		.10
A3 ( )	1	Flat nose clip	260-53		.15
A4 ( )	1	Test lamp	412-17		.20

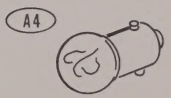


PARTS FROM MAIN PACK

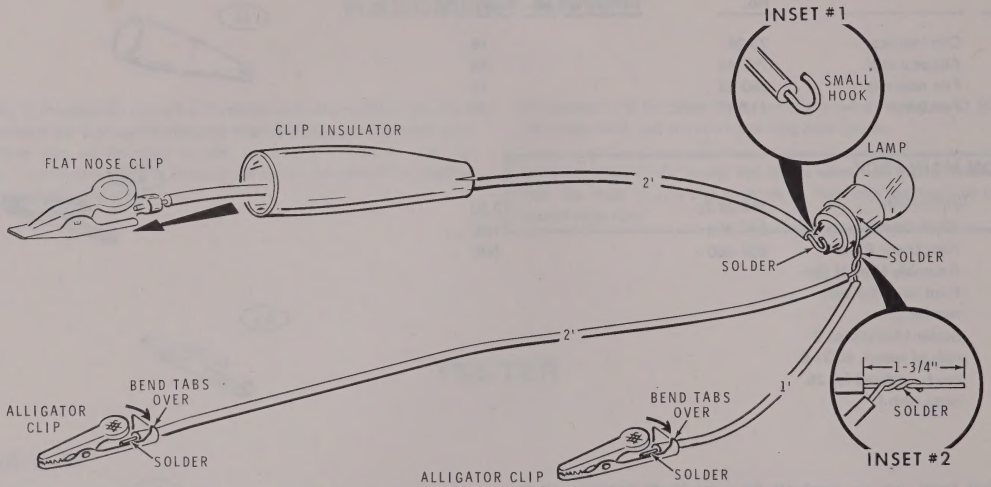
( )	1	Brown wire	344-34-70	3.50
( )	1	Kit Builders Guide	597-308	N/C
( )	1	Parts Order Form	597-260	N/C
( )	1	Assembly Manual (See front cover for part number.)		
( )	1	Solder (Additional 3' rolls of solder, #331-6, can be ordered for 25 cents each.)		







The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering (Michigan residents add 4% sales tax) to cover insurance, postage, and handling. Outside the U.S.A., parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.



PICTORIAL 1-1

TESTER ASSEMBLY

Refer to Pictorial 1-1 for the following steps.

NOTE: Be sure you have read the "Special Notice" on Page 3 before you perform any assembly steps.

To prepare a wire, as in the following step, cut the wire to the specified length and then remove 1/4" of insulation from each end.

( ) Prepare a 2' brown wire and solder a flat-nose clip on one end as shown in the Pictorial.

( ) From the other end of this wire, slide a clip insulator over the flat-nose clip.

( ) Refer to inset drawing #1 and form a small hook at the other end of this wire. Then solder the hook to the end of the test lamp.

( ) Prepare another 2' brown wire and solder an alligator clip on one end.

( ) At the other end of this wire, remove an additional 1-1/2" (total 1-3/4") of insulation.

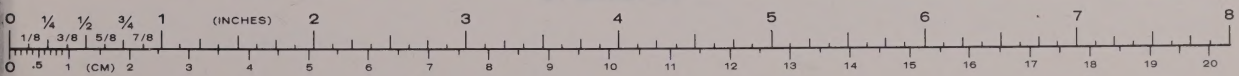
( ) Prepare a 1' brown wire and solder an alligator clip on one end.

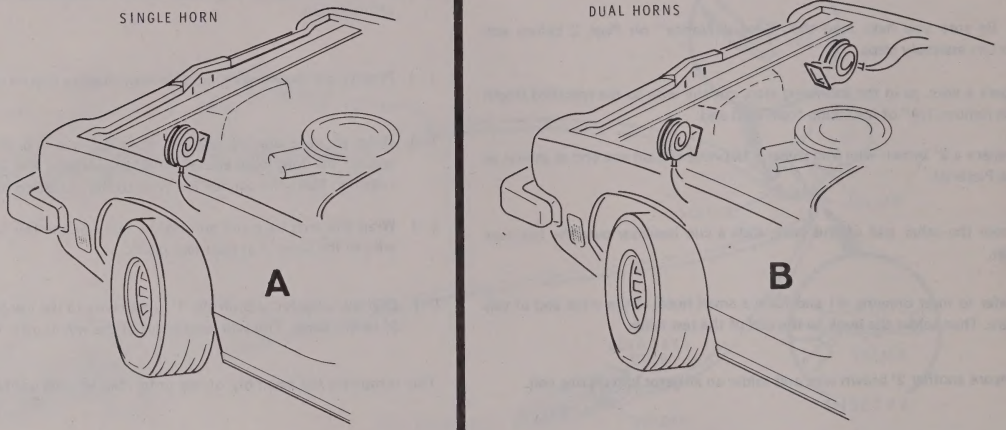
( ) Refer to inset drawing #2 and wrap the free end of the 1' brown wire around the long bare end of the 2' brown wire and solder the two wires together. Make the connection close to the insulation of the 2' wire.

( ) Wrap the long bare end around the body of the test lamp and solder the wire to the lamp in at least two places.

( ) Clip the alligator clip on the 1' brown wire to the insulation on one of the 2' brown wires. This will keep it out of the way until it is needed later.

This completes the assembly of the tester. Set it aside until it is called for later.





PICTORIAL 1-2

DETERMINATION OF RELAY

NOTE: If you have purchased a Heathkit Model GDA-1157-1 Siren Accessory, disregard the following information and proceed to the "Electronics Parts List" in this Manual.

IMPORTANT: If you plan to connect the Auto Intrusion Alarm to the horn in your vehicle, your vehicle must be equipped with a horn relay. If you are certain that your vehicle has a horn relay and you are familiar with its location, proceed to "Relay Types" on the following page. If you are not familiar with the location of the relay, or if you are not certain whether your vehicle has a horn relay, perform the following "Relay Check." You will need help from a friend to make this check.

RELAY CHECK

NOTE: Your vehicle must be located in a fairly quiet place for the following check.

( ) Locate the horn or horns in your vehicle. Then refer to Pictorial 1-2 and disconnect the wires going to the horns. These wires usually have push-on connectors on them and are pushed onto tabs on the horn.

( ) Have a friend rapidly depress and release the horn button on the steering wheel. If your vehicle has a horn relay, you will hear it energize and de-energize each time the horn button is depressed and released (indicated by an audible "click-click"). If you hear this "click-click," use the sound as a guide to locate the horn relay. If you still have difficulty locating the relay, put your hand on the suspected part. If that part is the horn relay, it will vibrate as the horn button is depressed and released rapidly. Once you have located the horn relay, proceed to "Relay Types" on the following page.

If you do not hear a "click-click" when the horn button is depressed and released, your vehicle probably does not have a horn relay. If your vehicle does not have a horn relay, or if you are not sure whether it does or not, you must purchase a Heathkit Model GDA-1157-2 Horn Relay at this time. If your vehicle does not have a horn relay, proceed to "Determination of Horn Wiring" on Page 14 of this Manual.

RELAY TYPES

Compare the shape of your horn relay to those shown in Pictorial 1-3. If your horn relay looks similar to the ones shown in Part A of the Pictorial, proceed to "Locating Proper Relay Wire."

However some vehicles have a horn relay that plugs into the fuse block similar to the ones shown in Part B of Pictorial 1-3. If your vehicle has this type of horn relay, you must purchase a Heathkit Model GDA-1157-2 Horn Relay at this time. If your vehicle has this fuse block type horn relay, proceed to "Determination of Horn Wiring" on Page 14 of this Manual.

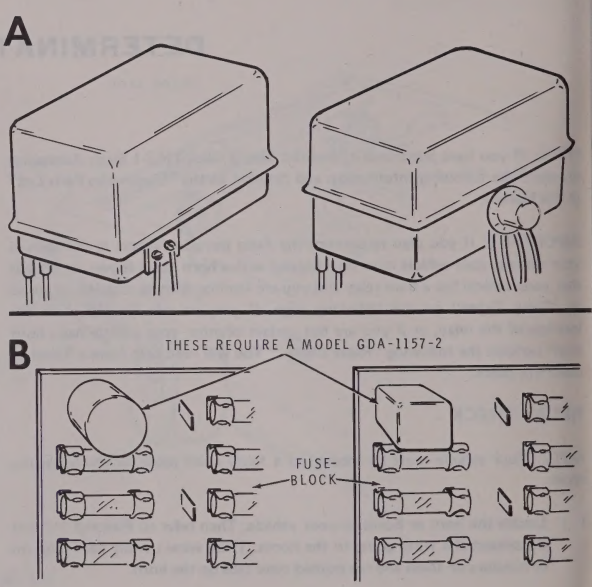
LOCATING PROPER RELAY WIRE

( ) Locate the tester assembly.

NOTE: In the next step, the relay case is not considered a terminal.

( ) Check the horn relay on your vehicle for the number of terminals. If it has 3 terminals, perform the steps under "Three Terminal Relay." If it has 4 terminals, perform the steps under "Four Terminal Relay." NOTE: Two or more wires connected to the same point is considered only one terminal.

IMPORTANT: This Intrusion Alarm will work with most types of horn relays like the ones shown in Part A of Pictorial 1-3. Perform the following tests to determine if your vehicle has the proper type. If you do not get the indicated results, purchase the Heathkit GDA-1157-2 Horn Relay, then proceed directly to "Determination of Horn Wiring" on Page 14 of this Manual.



PICTORIAL 1-3

Three Terminal Relay

NOTE: You will need help from a friend for the following steps.

( ) Connect the uninsulated alligator clip on the 2' brown wire of the tester assembly to the engine block. Make sure it is a good ground connection.

( ) Make sure the wires going to the horn(s) are disconnected.

( ) Connect the insulated flat-nose clip of the tester assembly to each relay terminal, one at a time. While the clip is connected to each terminal, have a friend depress and release the horn button. You should obtain the results listed in Chart #1.

NOTE: The terminals on your horn relay will probably not be numbered. The numbers in Chart #1 only signify that there are three terminals.

Chart #1

TERMINAL	HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
#1	Test lamp ON BRIGHT.	Test lamp ON BRIGHT.
#2	Test lamp OFF.	Test lamp ON (may be dim).
#3	Test lamp ON BRIGHT.	Test lamp OFF.

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Locate the wire connected to the relay terminal that produced the following results.

HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
Test lamp OFF.	Test lamp ON (may be dim).

( ) Label this wire "HB."

( ) Disconnect the leads of the tester assembly.

( ) Reconnect the wires going to the horn(s).

( ) Refer to "Jumper Wire Installation" on Page 36 of this Manual and write #1 in the blank space provided. Then proceed to "Electronics Parts List" on Page 16 of this Manual.

Four Terminal Relay

NOTE: You will need help from a friend for the following steps.

( ) Connect the uninsulated alligator clip on the 2' brown wire of the tester assembly to the engine block. Make sure it is a good ground connection.

( ) Make sure that the wires going to the horn(s) are disconnected.

( ) Connect the insulated flat-nose clip of the tester assembly to each relay terminal, one at a time. While the clip is connected to each terminal, have a friend depress and release the horn button. You should obtain the results listed in Chart #2.

NOTE: The terminals on your horn relay will probably not be numbered. The numbers in Chart #2 only signify that there are four terminals.

Chart #2

TERMINAL	HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
1	Test lamp ON BRIGHT.	Test lamp ON BRIGHT.
2	Test lamp OFF.	Test lamp ON (may be dim).
3	Test lamp ON BRIGHT.	Test lamp OFF.
4	Test lamp OFF.	Test lamp ON (may be dim).

( ) Clip the flat-nose clip of the tester assembly to the insulation on one of the 2' brown wires. Do not let the flat-nose clip touch anything in the following steps.

( ) Reconnect the wires going to the horn(s).

( ) Locate the two horn relay terminals that produced the following results.

HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
Test lamp OFF.	Test lamp ON (may be dim).

NOTE: Be careful to touch only the indicated terminals in the next step.

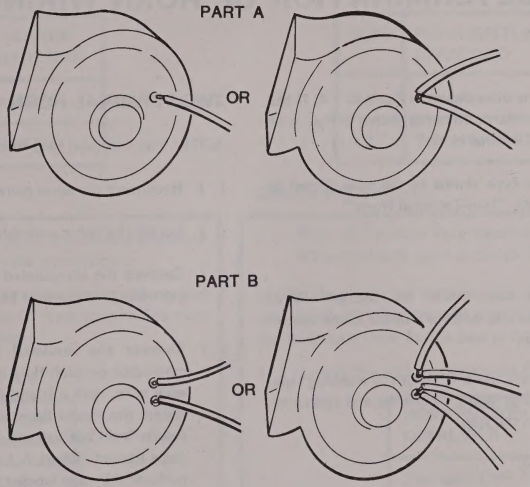
( ) With the uninsulated alligator clip on the 1' brown wire of the tester assembly, touch each of these two terminals, one at a time. Touching one terminal will cause the horn relay to buzz. Touching the other terminal will cause the horn to blow.

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Locate the wire going to the relay terminal that caused the horn to blow and label this wire "HB."

( ) Disconnect the leads of the tester assembly and set the assembly aside. It will be used again later.

( ) Refer to "Jumper Wire Installation" on Page 36 of this Manual and write #1 in the blank space provided. Then proceed to "Electronics Parts List" on Page 16 of this Manual.



PICTORIAL 1-4

DETERMINATION OF HORN WIRING

Compare the horn(s) in your vehicle with the ones shown in Pictorial 1-4. If the horn or horns are of the one-terminal type similar to the ones shown in Part A of Pictorial 1-4, perform the steps under "One-Terminal Horn."

If the horn or horns are of the two-terminal type similar to the ones shown in Part B of Pictorial 1-4, perform the steps under "Two-Terminal Horn."

ONE-TERMINAL HORN

( ) Before you perform the following steps, refer to "Jumper Wire Installation" on Page 36 of this Manual and write #1 in the blank space provided. Then return to the steps below.

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Reconnect the wires going to the horn(s).

( ) Label the wire going to the horn(s) "HW."

Proceed to "Electronics Parts List" on Page 16 of this Manual.

TWO-TERMINAL HORN

NOTE: You will need help from a friend for the following steps.

( ) Reconnect the wires going to the horn(s).

( ) Locate the tester assembly.

( ) Connect the uninsulated alligator clip on the 2' brown wire of the tester assembly to the engine block. Make sure it is a good ground connection.

( ) Connect the insulated flat-nose clip of the tester assembly to the connector on each horn wire, one at a time. While the clip is connected to each wire, have a friend depress and release the horn button. You should obtain the results listed in either Chart A or Chart B. You will not obtain results from both charts. If you obtain the results in Chart A, perform the steps labeled "Chart A Instructions." If you obtain the results in Chart B, perform the steps labeled "Chart B Instructions."

NOTE: The horn wires will probably not be numbered. The numbers only signify that there are two wires.

CHART A

WIRE	HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
#1	Test lamp OFF	Test lamp OFF
#2	Test lamp ON	Test lamp OFF

Chart A Instructions

( ) Refer to "Jumper Wire Installation" on Page 36 of this Manual and write #1 in the blank space provided. Then return to the steps below.

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Locate the wire that produced the following results.

HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
Test lamp ON	Test lamp OFF

( ) Label this wire "HW."

CHART B

WIRE	HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
#1	Test lamp ON	Test lamp ON
#2	Test lamp OFF	Test lamp ON

Chart B Instructions

( ) Refer to "Jumper Wire Installation" on Page 36 of this Manual and write #2 in the blank space provided. Then return to the steps below.

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Locate the wire that produced the following results.

HORN BUTTON DEPRESSED	HORN BUTTON NOT DEPRESSED
Test lamp OFF	Test lamp ON

( ) Label this wire "HW."

( ) Disconnect the leads of the tester assembly and set the assembly aside. It will be used again later.

( ) Reconnect the wires going to the horn(s).

Proceed to "Electronics Parts List" on Page 16 of this Manual.

ELECTRONICS PARTS LIST

Check each part against the following list. The key numbers correspond to the numbers on the Parts Pictorials. Make a check (✓) in the space provided as you identify each part. Any part that is packed in an individual envelope with the part number on it should be placed back in the envelope after you identify it until it is called for in a step. Do not throw away any packing materials until you have accounted for all the parts.

To order a replacement part, use the Parts Order Form furnished with this kit. If a Parts Order Form is not available, refer to "Replacement Parts" inside the rear cover of the Manual.

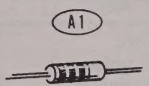
Each circuit part in this kit has its own component number (R2, C4, etc.). Use these numbers when you want to positively identify the same part in the various sections of the Manual. These numbers, which are especially useful if a part has to be replaced, appear:

- In the Parts List,
- At the beginning of each step where a component is installed,
- In some illustrations,
- In the Schematic,
- In the sections at the rear of the Manual.

KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each

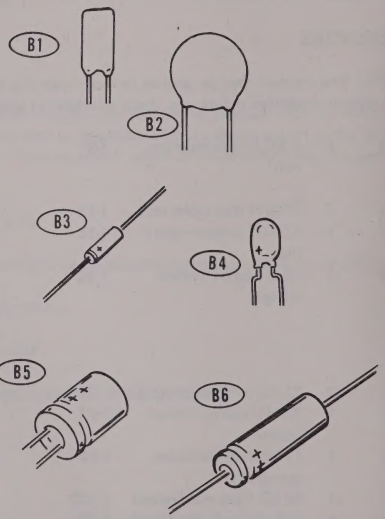
RESISTORS

NOTE: The resistors may be packed in more than one envelope. Open all the resistor envelopes before you check the resistors against the Parts List.



A1 ( )	6	1000 Ω (brown-black-red)	1-9	R2, R5, R17, R25, R27, R28	.15
A1 ( )	2	2700 Ω (red-violet-red)	1-13	R18, R22	.15
A1 ( )	1	4700 Ω (yellow-violet-red)	1-16	R37	.15
A1 ( )	17	10 kΩ (brown-black-orange)	1-20	R1, R4, R6, R7, R8, R9, R11, R12, R13, R16, R19, R21, R26, R31, R32, R34, R38	.15
A1 ( )	2	22 kΩ (red-red-orange)	1-22	R23, R39	.15
A1 ( )	1	33 kΩ (orange-orange-orange)	1-24	R24	.15
A1 ( )	1	47 kΩ (yellow-violet-orange)	1-25	R36	.15
A1 ( )	1	82 kΩ (gray-red-orange)	1-102	R29	.15
A1 ( )	1	220 kΩ (red-red-yellow)	1-29	R35	.15
A1 ( )	1	2.2 MΩ (red-red-green)	1-37	R33	.15

KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
CAPACITORS					
B1 ( )	3	.01 μF Mylar*	27-74	C1, C4, C7	.15
B2 ( )	1	.2 μF disc	21-99	C11	.55
B3 ( )	1	2.2 μF tantalum	25-195	C10	1.35
B4 ( )	1	47 μF tantalum	25-289	C9	.75
B5 ( )	5	50 μF electrolytic	25-116	C2, C3, C5, C6, C8	.75
B6 ( )	1	100 μF electrolytic	25-28	C12	.90



*DuPont Registered Trademark

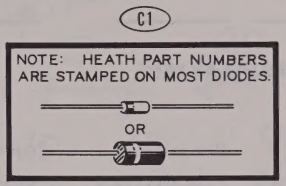
KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each

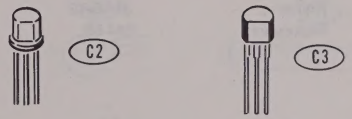
DIODES-TRANSISTORS

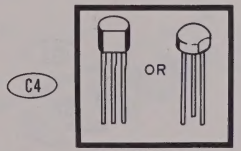
NOTE: Transistors are marked for identification in one of the following four ways:

1. Part number.
2. Transistor type number.
3. Part number and transistor type number.
4. Part number with a transistor type number other than the one listed.

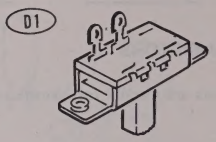
C1 ( )	5	1N4149 diode	56-56	D5, D6, D8, D9, D13	.30
C1 ( )	7	1N4002 diode	57-65	D1, D2, D4, D7, D10, D12	.45
C1 ( )	1	1N709A 6.2 V zener diode	56-58	ZD3	.50
C2 ( )	1	TZ1160 transistor	417-218	Q15	.50
C3 ( )	8	MPSA20 transistor	417-801	Q2, Q4, Q7, Q9, Q10, Q11, Q14, Q17	.25
C3 ( )	2	MPSL01 transistor	417-811	Q1, Q12	.50
C4 ( )	6	2N4121 transistor	417-235	Q3, Q5, Q6, Q8, Q13, Q16	.60

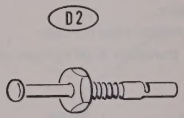


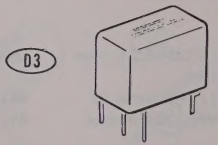




KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT Component No.	PRICE Each
SWITCHES-RELAY-WIRE					
D1 ( )	2	Slide switch	60-1	SW1, SW2	.30
D2 ( )	4	Pushbutton switch	64-778	SW3, SW4, SW5, SW6	.65
D3 ( )	1	Relay	69-50	RY1	4.05
( )	5'	Black wire	344-2		.05
( )	1	Red wire	344-3-40		2.00
( )	6"	White wire	344-59		.05

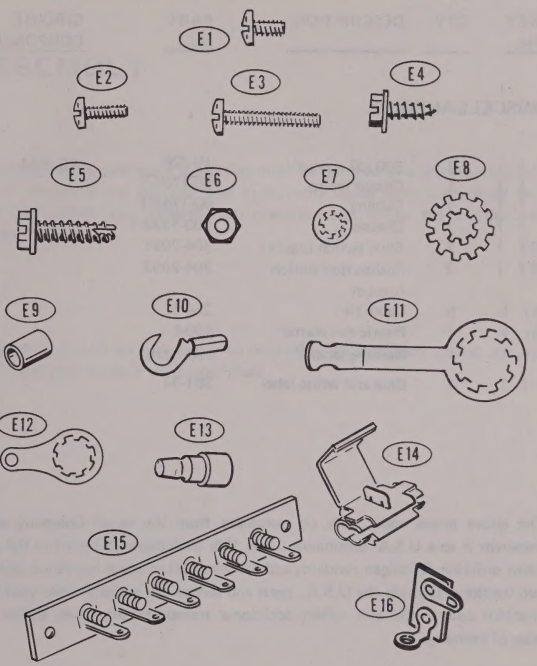




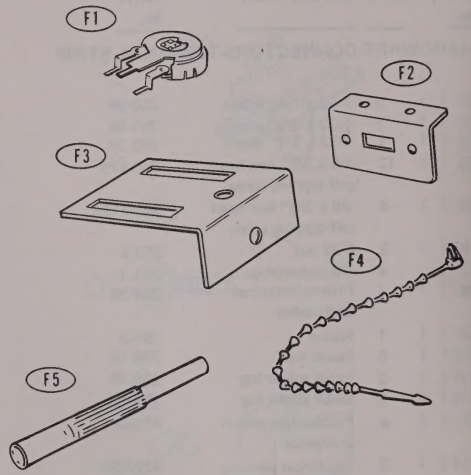


HARDWARE-CONNECTORS-TERMINAL STRIP

KEY No.	QTY.	DESCRIPTION	PART No.	PRICE Each
E1 ( )	5	6-32 x 1/4" screw	250-56	.05
E2 ( )	1	6-32 x 3/8" screw	250-89	.05
E3 ( )	1	6-32 x 3/4" screw	250-29	.05
E4 ( )	12	#6 x 3/8" hex head self-tapping screw	250-475	.05
E5 ( )	4	#8 x 3/8" hex head self-tapping screw	250-1138	.05
E6 ( )	3	6-32 nut	252-3	.05
E7 ( )	4	#6 lockwasher	254-1	.05
E8 ( )	4	Internal/external lockwasher	254-28	.05
E9 ( )	1	Spacer	255-3	.05
E10 ( )	6	Spade lug	259-15	.05
E11 ( )	2	Large solder lug	259-10	.05
E12 ( )	2	Small solder lug	259-12	.05
E13 ( )	4	Pushbutton switch connector	432-881	.15
E14 ( )	3	Insulation piercing connector	432-906	.15
E15 ( )	1	6-lug terminal strip	431-7	.25
E16 ( )	1	1-lug terminal strip	431-15	.15



KEY No.	QTY.	DESCRIPTION	PART No.	CIRCUIT COMPONENT No.	PRICE Each
MISCELLANEOUS					
F1 ( )	2	500 kΩ control	10-326	R3, R14	1.00
( )	1	Circuit board	85-1784-1		2.20
( )	1	Cabinet	90-1148-1		2.65
( )	1	Chassis	200-1233-1		2.50
F2 ( )	1	Slide switch bracket	204-2091		.70
F3 ( )	2	Pushbutton switch bracket	204-2092		.55
F4 ( )	5	Cable tie	354-6		.15
F5 ( )	1	Plastic nut starter	490-5		.15
( )	1	Warning label	390-1216		.30
( )	1	Blue and white label	391-34		.15



The above prices apply only on purchases from the Heath Company where shipment is to a U.S.A. destination. Add 10% (minimum 25 cents) to the price when ordering (Michigan residents add 4% sales tax) to cover insurance, postage, and handling. Outside the U.S.A., parts and service are available from your local Heathkit source and will reflect additional transportation, taxes, duties, and rates of exchange.

ELECTRONICS ASSEMBLY

Pictorials and Details that are too large for the Manual are printed on several large fold-in pages. Some of the instructions will direct you to an illustration on one of these fold-in pages. The illustrations are arranged in Pictorial number sequence.

Position all parts as shown in the Pictorials. Follow the instructions carefully and read the entire step before you perform the operation.

You will install components on the lettered side of the circuit board in the following steps. Resistors can be installed either way within their outline.

Transistors, diodes, and some capacitors must be installed in a specific manner. "Notes" will show and tell you how to correctly install these parts. Read the entire step before you perform each operation and follow the instructions carefully.

The diodes in this kit are very similar to each other. Be extremely careful that you install the proper diode in the proper place.

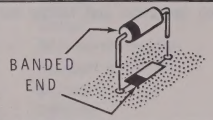
HEATHKIT

START

NOTE: When a jumper wire is called for, cut the white wire to the indicated length. Then remove 1/4" of insulation from each end and install the wire.

( ) 2" jumper wire.

NOTE: When you install a diode, be sure to position the banded end as shown on the circuit board.



( ) D8: 1N4149 diode (#56-56).

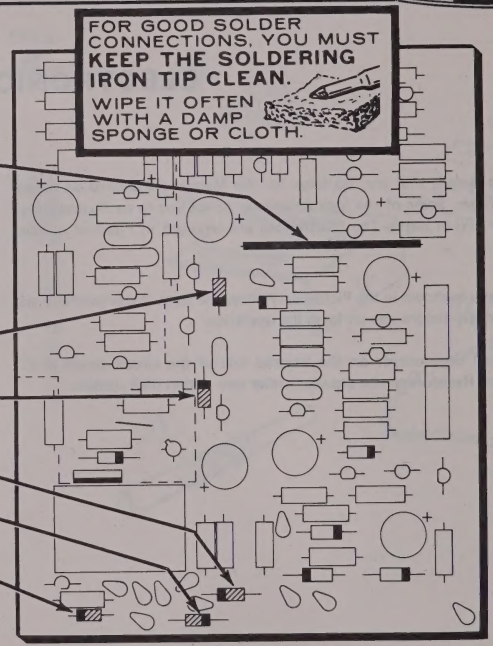
( ) D9: 1N4149 diode (#56-56).

( ) D1: 1N4002 diode (#57-65).

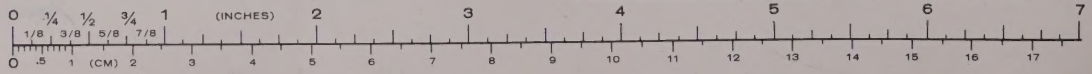
( ) D11: 1N4002 diode (#57-65).

( ) D10: 1N4002 diode (#57-65).

( ) Solder the leads to the foil and cut off the excess lead lengths.

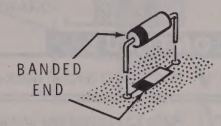


PICTORIAL 2-1



START

NOTE: When you install a diode, be sure to position the banded end as shown on the circuit board.



( ) D13: 1N4149 diode (#56-56).

( ) D12: 1N4002 diode (#57-65).

( ) D7: 1N4002 diode (#57-65).

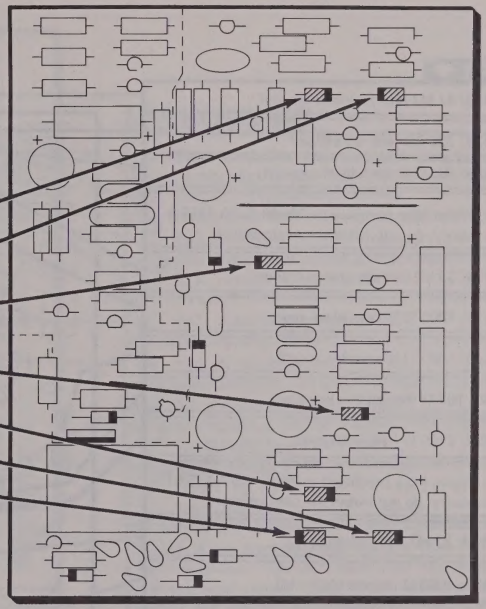
( ) D5: 1N4149 diode (#56-56).

( ) D6: 1N4149 diode (#56-56).

( ) ZD3: 1N709A, 6.2V zener diode (#56-58).

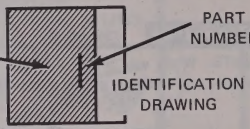
( ) D2: 1N4002 diode (#57-65).

( ) Solder the leads to the foil and cut off the excess lead lengths.



PICTORIAL 2-2

The steps performed in this Pictorial are in this area of the circuit board.



START

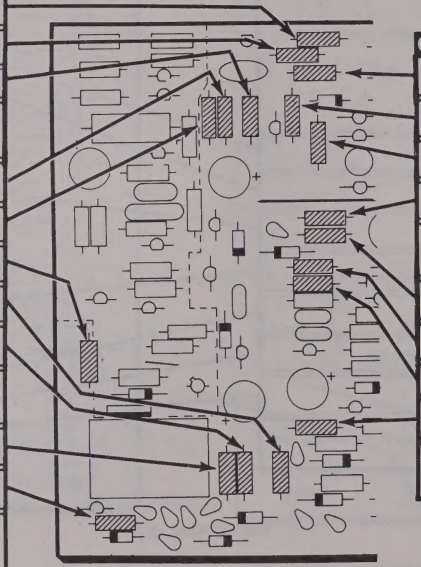
- ( ) R36: 47 kΩ (yellow-violet-orange).
- ( ) R35: 220 kΩ (red-red-yellow).
- ( ) R26: 10 kΩ (brown-black-orange).

NOTE: If you have purchased a Model GDA-1157-1 Siren accessory, do not install the next resistor.

- ( ) R24: 33 kΩ (orange-orange-orange).
- ( ) R25: 1000 Ω (brown-black-red).
- ( ) R28: 1000 Ω (brown-black-red).
- ( ) R6: 10 kΩ (brown-black-orange).
- ( ) R22: 2700 Ω (red-violet-red).

NOTE: If you have purchased a Model GDA-1157-1 Siren accessory, do not install the next resistor.

- ( ) R23: 22 kΩ (red-red-orange).
- ( ) R27: 1000 Ω (brown-black-red).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.

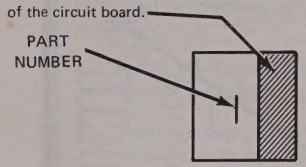


CONTINUE

- ( ) R38: 10 kΩ (brown-black-orange).
- ( ) R39: 22 kΩ (red-red-orange).
- ( ) R29: 82 kΩ (gray-red-orange).
- ( ) R21: 10 kΩ (brown-black-orange).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.
- ( ) R17: 1000 Ω (brown-black-red).
- ( ) R16: 10 kΩ (brown-black-orange).
- ( ) R18: 2700 Ω (red-violet-red).
- ( ) R7: 10 kΩ (brown-black-orange).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.

PICTORIAL 2-3

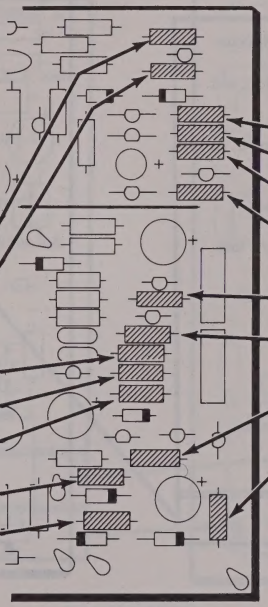
The steps performed in this Pictorial are in this area of the circuit board.



IDENTIFICATION DRAWING

START

- ( ) R37: 4700 Ω (yellow-violet-red).
- ( ) R34: 10 kΩ (brown-black-orange).
- ( ) R12: 10 kΩ (brown-black-orange).
- ( ) R9: 10 kΩ (brown-black-orange).
- ( ) R4: 10 kΩ (brown-black-orange).
- ( ) R5: 1000 Ω (brown-black-red).
- ( ) R1: 10 kΩ (brown-black-orange).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.



PICTORIAL 2-4

CONTINUE

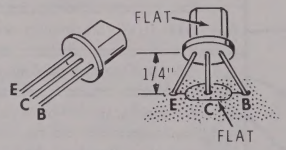
- ( ) R31: 10 kΩ (brown-black-orange).
- ( ) R32: 10 kΩ (brown-black-orange).
- ( ) R33 2.2 MΩ (red-red-green).
- ( ) R19: 10 kΩ (brown-black-orange).
- ( ) R13: 10 kΩ (brown-black-orange).
- ( ) R11: 10 kΩ (brown-black-orange).
- ( ) R8: 10 kΩ (brown-black-orange).
- ( ) R2: 1000 Ω (brown-black-red).
- ( ) Solder the leads to the foil and cut off the excess lead lengths.

NOTE: If you have purchased a Model GDA-1157-1 Siren Accessory, you will have a 33 kΩ (orange-orange-orange) resistor and a 22 kΩ (red-red-orange) resistor left. Discard these resistors, they will not be used.

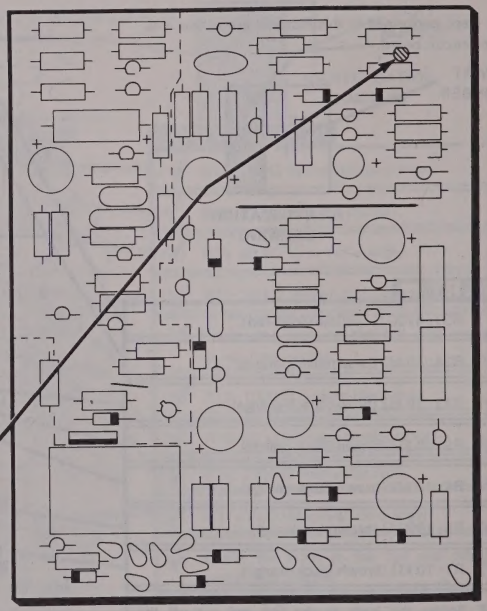
START

NOTE: In the following step, install the transistor as follows:

1. Refer to the illustration below and identify the E, C, and B leads of the transistor.
2. Insert the transistor leads into the corresponding E, C, and B holes in the circuit board.
3. Position the transistor 1/4" above the circuit board.
4. Turn the circuit board over, solder the leads to the foils, and cut off the excess lead lengths.



( ) Q15: TZ1160 transistor (#417-218).

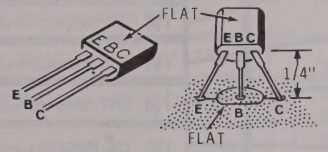


PICTORIAL 2-5

START

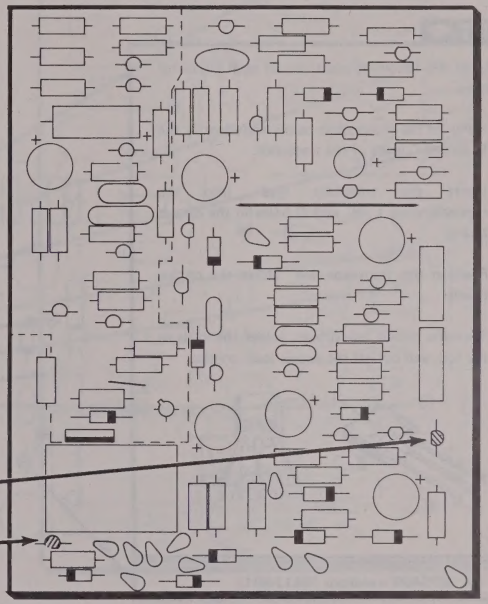
NOTE: In the following steps, install each transistor as follows:

1. Refer to the illustration below and identify the E, B, and C leads of the transistor.
2. Insert the transistor leads into the corresponding E, B, and C holes in the circuit board.
3. Position the transistor 1/4" above the circuit board.
4. Turn the circuit board over, solder the leads to the foil, and cut off the excess lead lengths.



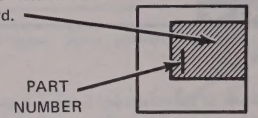
( ) Q1: MPSL01 transistor (#417-811).

( ) Q12: MPSL01 transistor (#417-811).



PICTORIAL 2-6

The steps performed in this Pictorial are in this area of the circuit board.

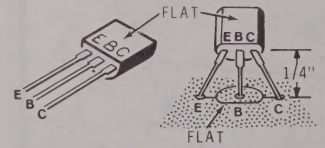


IDENTIFICATION DRAWING

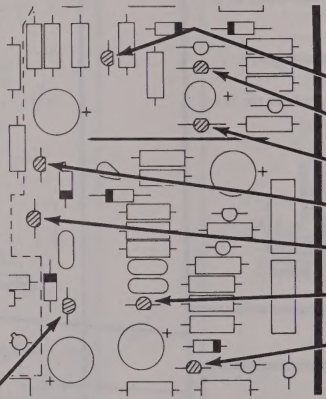
START

NOTE: In the following steps, install each transistor as follows:

1. Refer to the illustration below and identify the E, B, and C leads of the transistor.
2. Insert the transistor leads into the corresponding E, B, and C holes in the circuit board.
3. Position the transistor 1/4" above the circuit board.
4. Turn the circuit board over, solder the leads to the foil, and cut off the excess lead lengths.



( ) Q9: MPSA20 transistor (#417-801).



CONTINUE

( ) Q17: MPSA20 transistor (#417-801).

( ) Q14: MPSA20 transistor (#417-801).

( ) Q7: MPSA20 transistor (#417-801).

( ) Q10: MPSA20 transistor (#417-801).

( ) Q11: MPSA20 transistor (#417-801).

( ) Q4: MPSA20 transistor (#417-801).

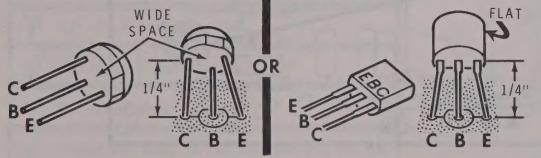
( ) Q2: MPSA20 transistor (#417-801).

PICTORIAL 2-7

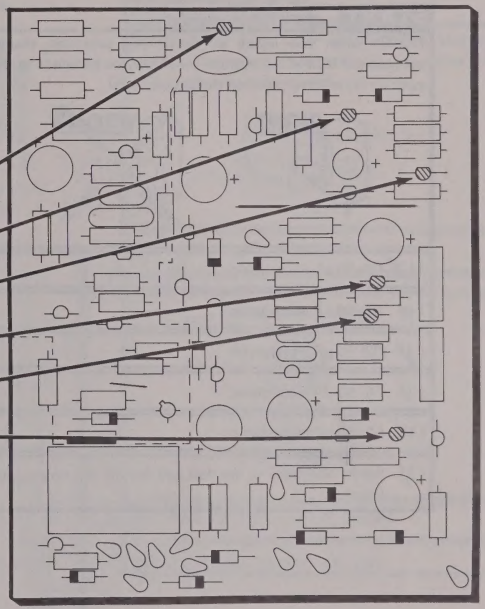
START

NOTE: Refer to Detail 2-8A to see how to install the transistors in the following steps.

- (✓) Q16: 2N4121 transistor (#417-235).
- (✓) Q13: 2N4121 transistor (#417-235).
- (✓) Q8: 2N4121 transistor (#417-235).
- (✓) Q6: 2N4121 transistor (#417-235).
- (✓) Q5: 2N4121 transistor (#417-235).
- (✓) Q3: 2N4121 transistor (#417-235).



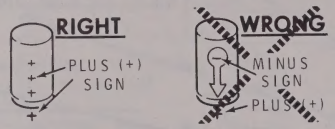
Detail 2-8A



PICTORIAL 2-8

START

NOTE: When you install an electrolytic capacitor, always connect the lead at the positive (+) end of the capacitor to the positive (+) marked point on the circuit board.



( ) C8: 50 μF electrolytic.

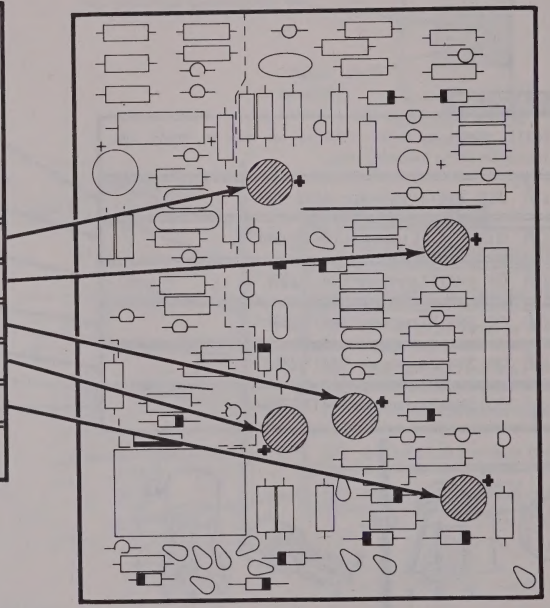
( ) C5: 50 μF electrolytic.

( ) C3: 50 μF electrolytic.

( ) C6: 50 μF electrolytic.

( ) C2: 50 μF electrolytic.

( ) Solder the leads to the foil and cut off the excess lead lengths.



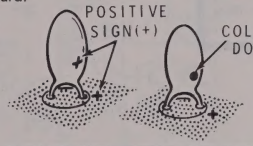
PICTORIAL 2-9

START

NOTE: Before you install disc or Mylar capacitors, use long-nose pliers to remove the excess insulation from the capacitor leads.

(✓) C11: .2 μF disc capacitor.

NOTE: When you install a tantalum capacitor, always match the positive (+) or dot marked lead of the capacitor with the positive (+) marked hole on the circuit board.



(✓) C9: 47 μF tantalum capacitor.

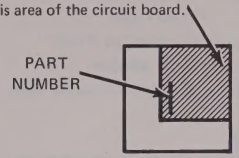
(✓) C7: .01 μF Mylar capacitor.

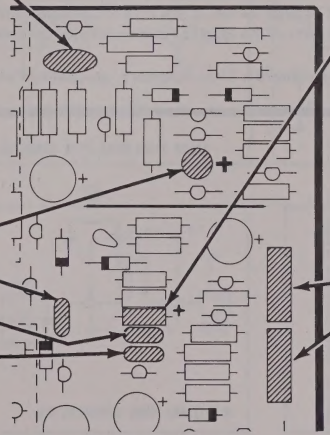
(✓) C1: .01 μF Mylar capacitor.

(✓) C4: .01 μF Mylar capacitor.

(✓) Solder the leads to the foil and cut off the excess lead lengths.

The steps performed in this Pictorial are in this area of the circuit board.

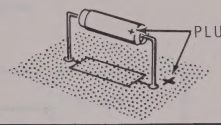




PICTORIAL 2-10

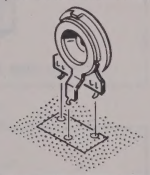
CONTINUE

NOTE: When you install the following tantalum capacitor, be sure to position the plus (+) marked end as shown on the circuit board.



(✓) C10: 2.2 μF tantalum.

NOTE: In the following steps, solder the control lugs to the foil as you install each control.

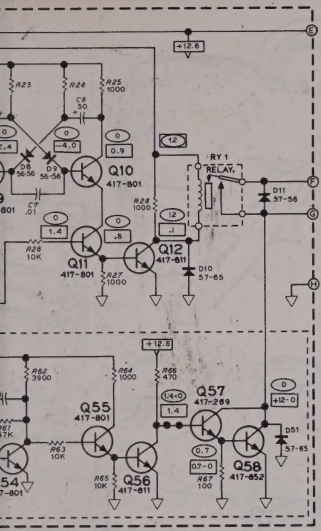


(✓) R14: 500 kΩ control (#10-326).

(✓) R3: 500 kΩ control (#10-326).

If you have purchased a Heathkit Model GDA-1157-1 Siren Accessory, proceed to the "Parts List" in that Manual at this time and assemble the Siren Accessory. Set the remaining parts of the GD-1157 aside until they are called for.

If you have not purchased a Siren Accessory, proceed to Pictorial 2-11 in this Manual.



SEE NOTE #9 AND A, OR B, OR C.

SCHEMATIC OF THE HEATHKIT® AUTO INTRUSION ALARM MODEL GD-1157 AND GDA-1157-1 SIREN ACCESSORY

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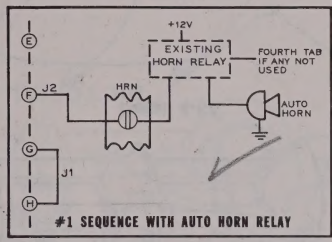
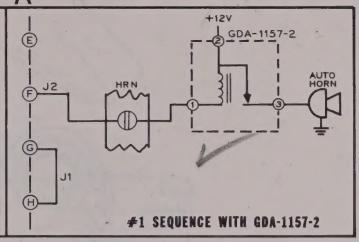
A

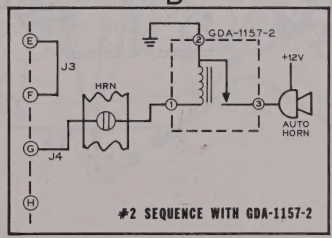


#1 SEQUENCE WITH AUTO HORN RELAY



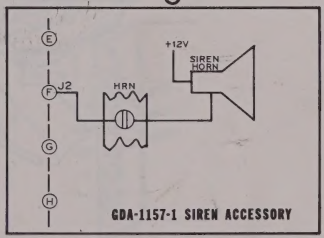
#1 SEQUENCE WITH GDA-1157-2

B



#2 SEQUENCE WITH GDA-1157-2

C



GDA-1157-1 SIREN ACCESSORY

S A DC VOLTAGE UNDER
SOUNDING / OR HORN BLOWING

S THE TYPE OF VOLTAGE AS

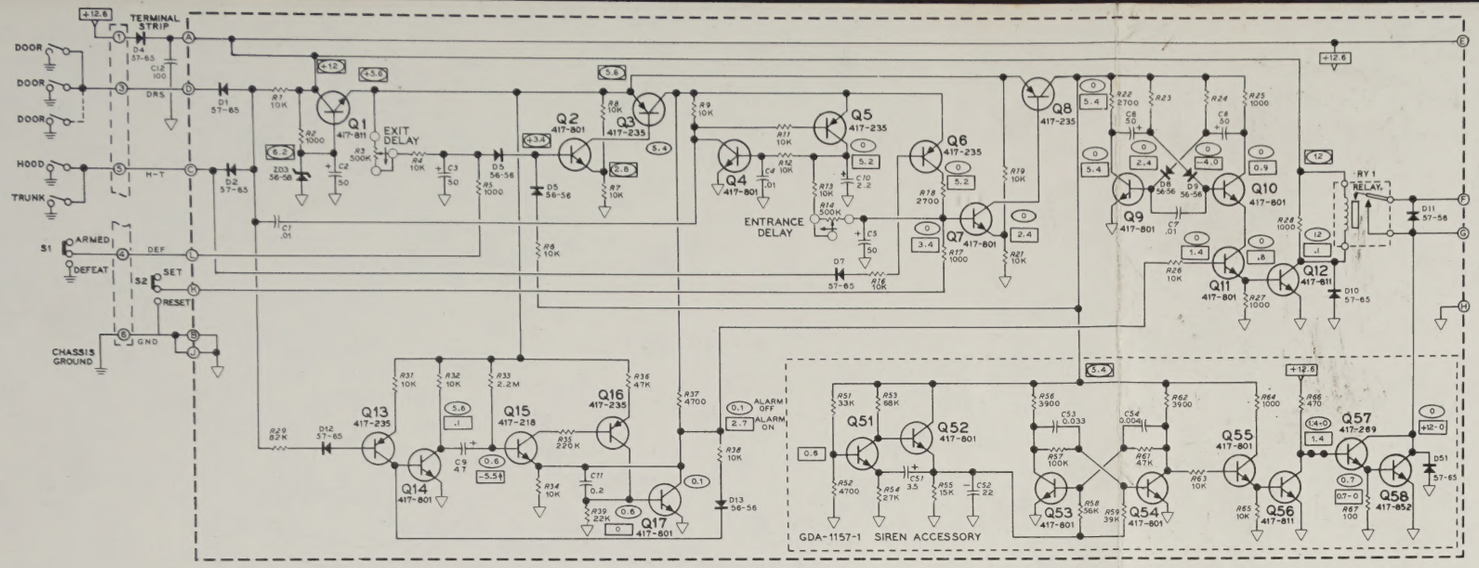
ALARM, THE VALUE OF
4 IS 33KΩ. IN THE
IE VALUE OF R23 IS
KΩ.

S FOLLOWS:

Y - J2

If you have purchased a Heathkit Model GDA-1157-1 Siren Accessory, proceed to the "Parts List" in that Manual at this time and assemble the Siren Accessory. Set the remaining parts of the GD-1157 aside until they are called for.

If you have not purchased a Siren Accessory, proceed to Pictorial 2-11 in this Manual.



SCHEMATIC OF THE
HEATHKIT®
AUTO INTRUSION ALARM
MODEL GD-1157
AND GDA-1157-1 SIREN ACCESSORY

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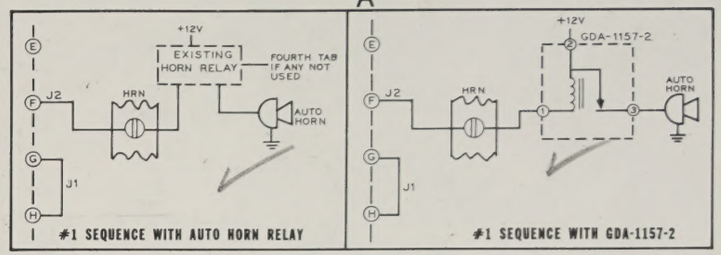
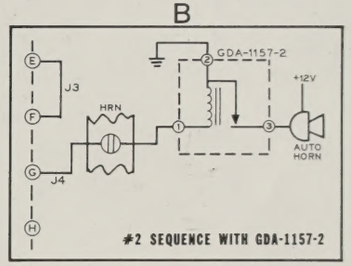
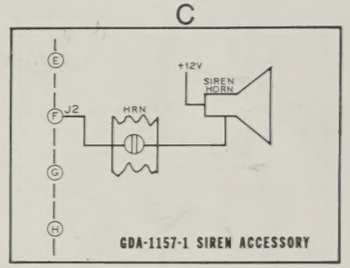
A



B



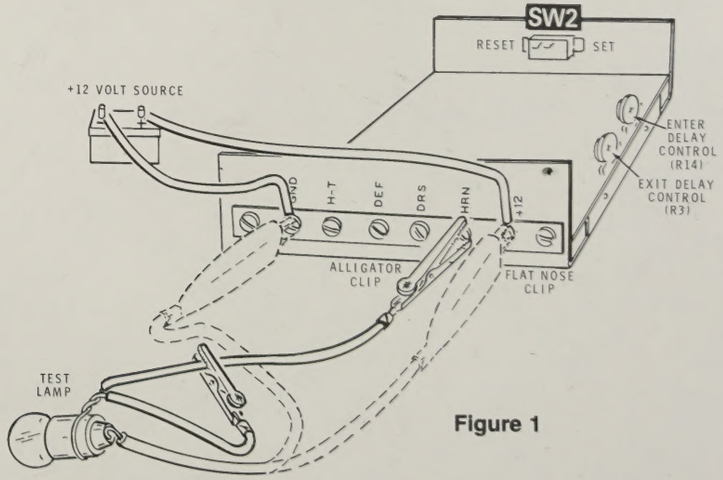
C



NOTES:

1. ALL RESISTORS ARE 1/2-WATT UNLESS MARKED OTHERWISE. RESISTOR VALUES ARE IN OHMS (K=1000, M=1,000,000).
2. ALL CAPACITOR VALUES LESS THAN 1 ARE IN µF. UNLESS MARKED OTHERWISE.
3. DC VOLTAGES WERE TAKEN WITH A HIGH IMPEDANCE INPUT VOLTMETER FROM THE POINT INDICATED TO THE CHASSIS GROUND. VOLTAGES MAY VARY ±20%.
4. ⬭ THIS SYMBOL INDICATES A DC VOLTAGE UNDER AN "ARMED" BUT SIREN NOT SOUNDING/OR HORN NOT BLOWING
5. ⏚ THIS SYMBOL INDICATES CHASSIS GROUND.
6. ▭ THIS SYMBOL INDICATES A DC VOLTAGE UNDER AN "ARMED" AND SIREN SOUNDING / OR HORN BLOWING
7. ⬭ THIS SYMBOL INDICATES THE TYPE OF VOLTAGE AS IN NOTES 4 AND 6.
8. IN THE GD-1157 AUTO INTRUSION ALARM, THE VALUE OF R23 IS 22KΩ AND THE VALUE OF R24 IS 33KΩ. IN THE GDA-1157-1 SIREN ACCESSORY, THE VALUE OF R23 IS 33KΩ AND THE VALUE OF R24 IS 82KΩ.
9. WIRES J1 THROUGH J4 ARE USED AS FOLLOWS:
   #1 SEQUENCE - J1 AND J2
   #2 SEQUENCE - J3 AND J4
   GDA-1157-1 SIREN ACCESSORY - J2

ILLUSTRATION BOOKLET



TURN CONTROLS CLOCKWISE TO DECREASE TIME

Figure 1

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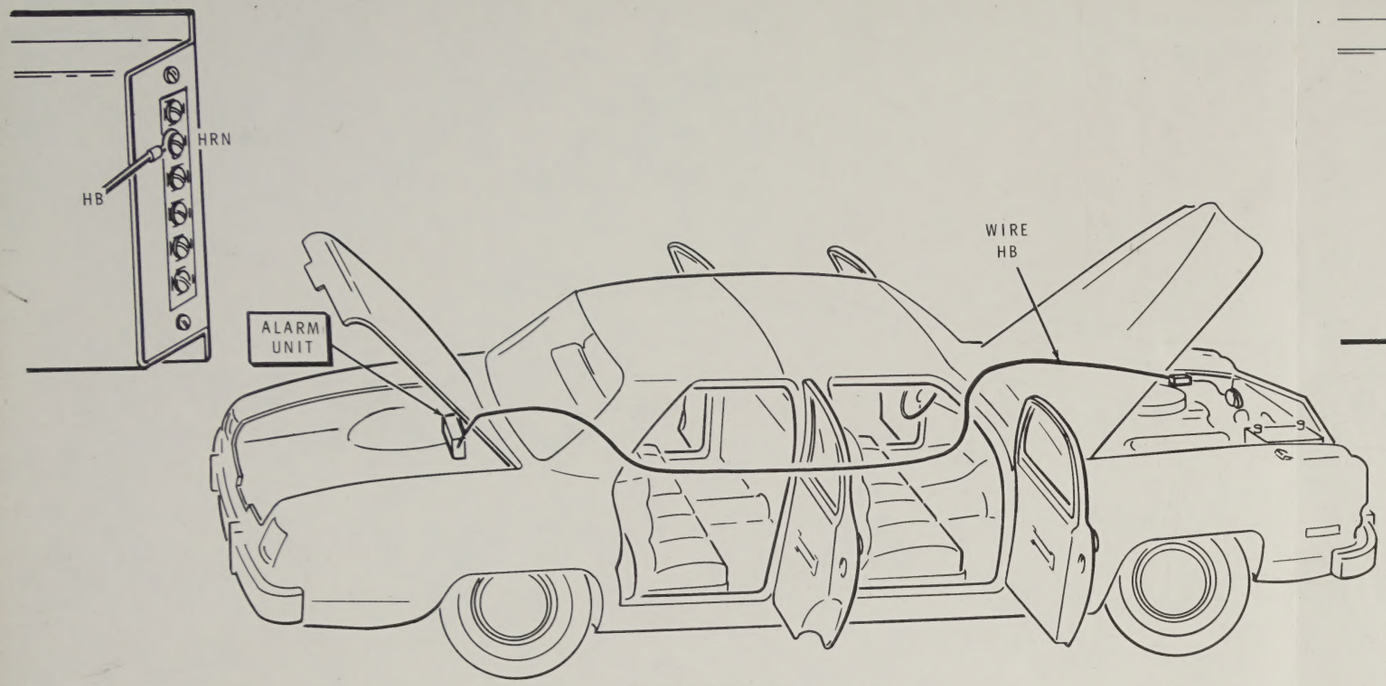
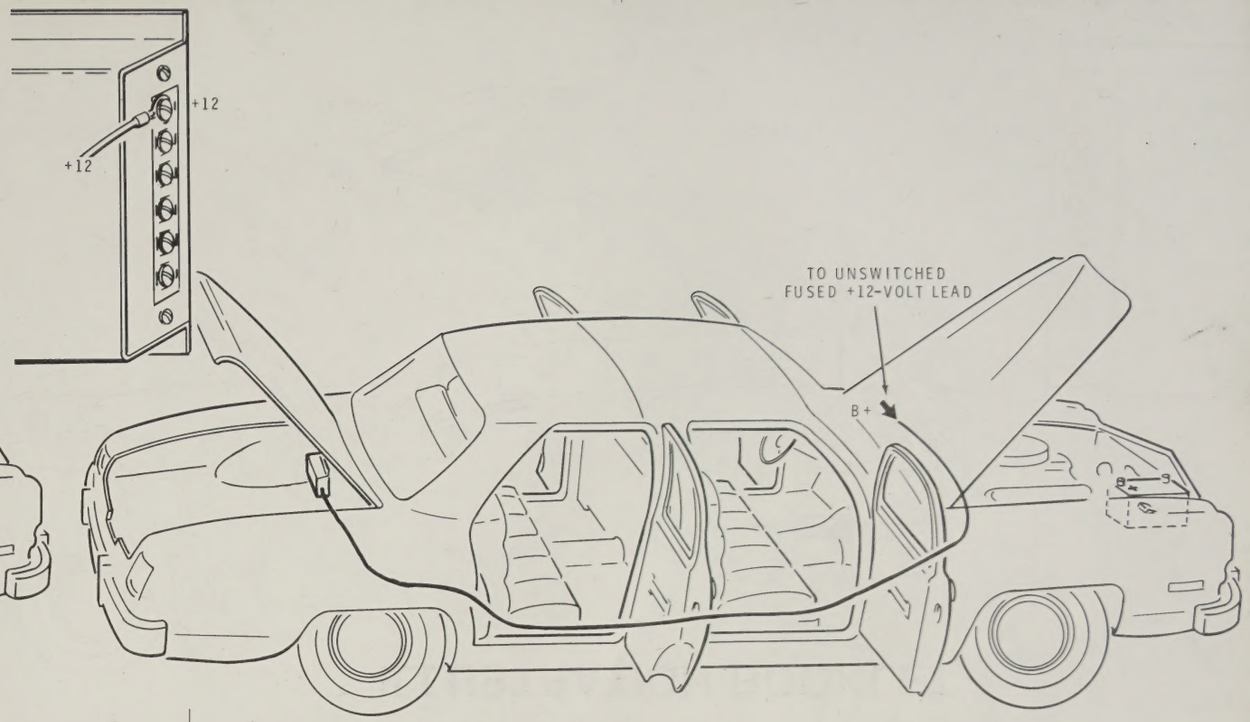
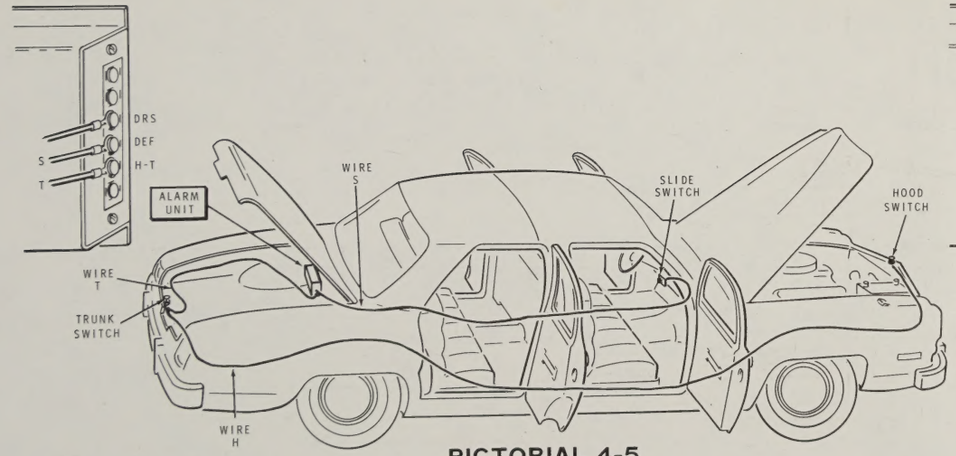


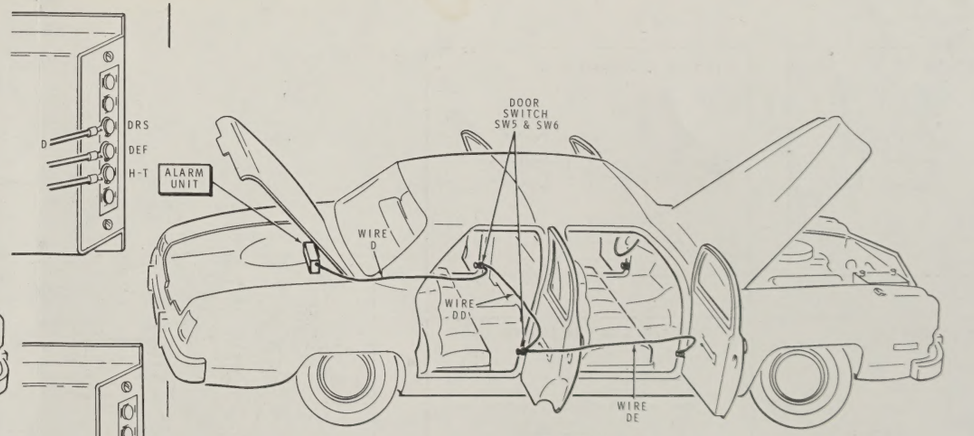
PICTORIAL 4-6



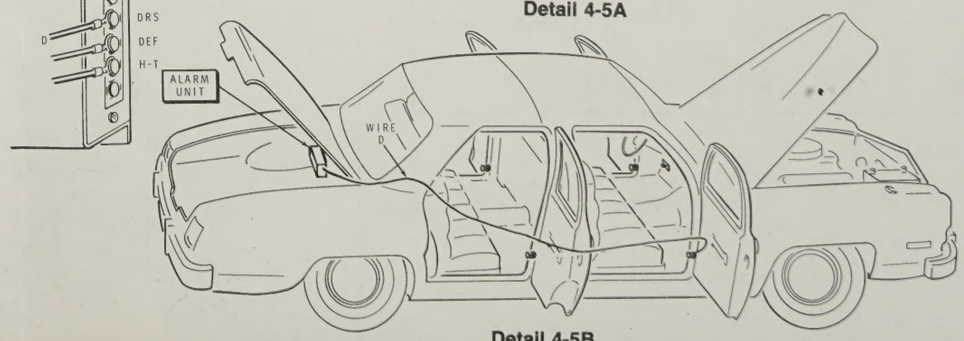
PICTORIAL 4-10



PICTORIAL 4-5

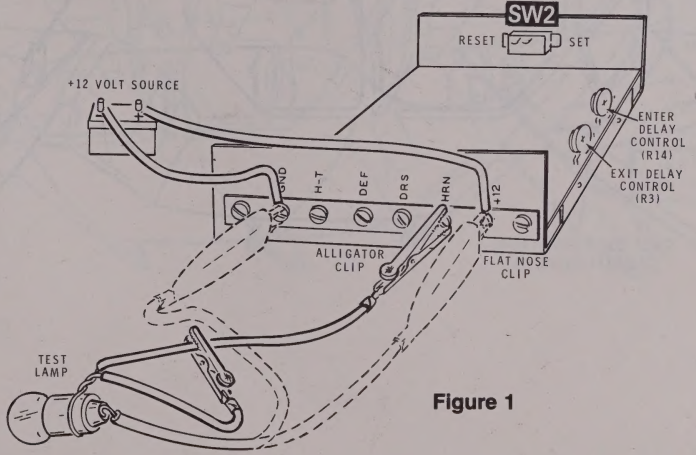


Detail 4-5A



Detail 4-5B

ILLUSTRATION BOOKLET



TURN CONTROLS CLOCKWISE TO DECREASE TIME

Figure 1

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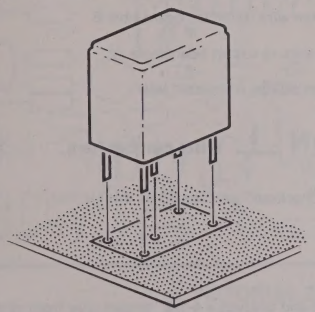
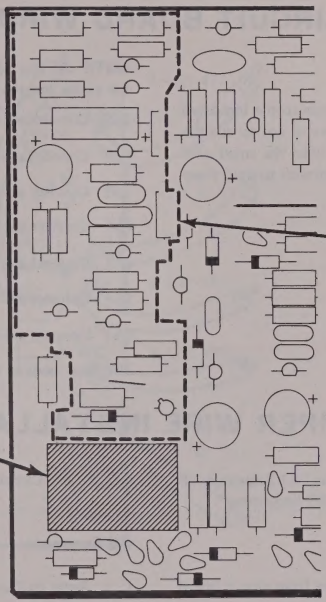
START

( ) RY1: Relay (#69-50). Solder the lugs to the foil.





CONTINUE

NOTE: If you have not purchased a Model GDA-1157-1 Siren Accessory, this area of the circuit board will not be used.

PICTORIAL 2-11

CIRCUIT BOARD WIRING

Refer to Pictorial 2-12 for the following steps.

NOTE: To prepare the wires in the following step, cut them to the indicated length and remove 1/4" of insulation from each end. Be careful not to cut the small wire strands when you remove the insulation. Then twist the small wire strands together and melt a small amount of solder on the strands to hold them together.

( ) Prepare the following wires:

QUANTITY	LENGTH	COLOR
6	4-1/2"	Brown
2	4-1/2"	Red
1	4-1/2"	Black

NOTE: As you connect the following wires, solder them to the foil and cut off the excess lengths on the foil side of the circuit board.

( ) Connect a 4-1/2" black wire to circuit board hole J.

( ) Connect a 4-1/2" brown wire to circuit board hole D.

( ) Connect a 4-1/2" brown wire to circuit board hole K.

( ) Connect a 4-1/2" brown wire to circuit board hole L.

( ) Connect a 4-1/2" brown wire to circuit board hole C.

( ) Connect a 4-1/2" brown wire to circuit board hole B.

( ) Connect a 4-1/2" red wire to circuit board hole A.

The other ends of these wires will be connected later.

JUMPER WIRE INSTALLATION 1 Write number here.

If you wrote #1 in the space above, perform the steps under "#1 Sequence." If you wrote #2 in the space above, perform the steps under "#2 Sequence."

#1 Sequence

( ) Refer to Detail 2-12A and connect a 4-1/2" brown wire from circuit board hole G to circuit board hole H.

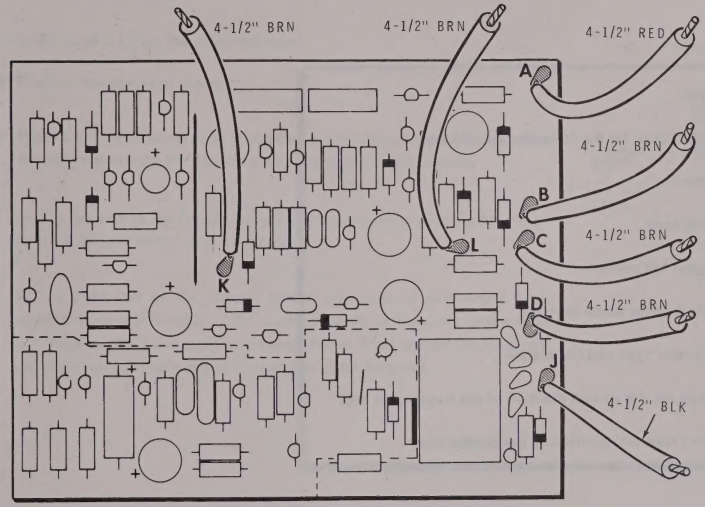
( ) Connect a 4-1/2" red wire to circuit board hole F. The other end of this wire will be connected later.

Proceed to "Circuit Board Checkout" on Page 38 of this Manual.

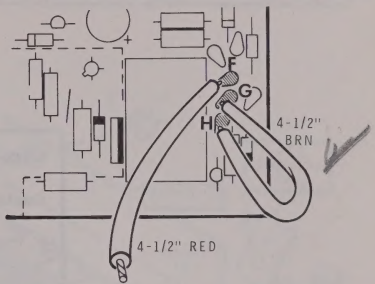
#2 Sequence

( ) Refer to Detail 2-12B and connect a 4-1/2" brown wire from circuit board hole E to circuit board hole F.

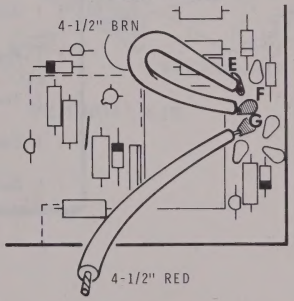
( ) Connect a 4-1/2" red wire to circuit board hole G. The other end of this wire will be connected later.



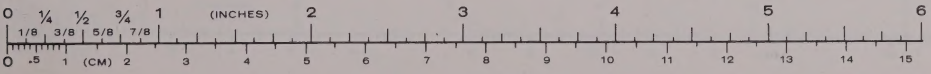
PICTORIAL 2-12



Detail 2-12A



Detail 2-12B



Circuit Board Checkout

Carefully inspect the circuit board for the following conditions.

( ) Unsoldered connections.

( ) "Cold" solder connections.

( ) Solder bridges between foil patterns.

( ) Protruding leads which could touch together.

( ) Transistors for the proper type and installation.

( ) Electrolytic capacitors for the correct position of the positive (+) end.

( ) Diodes for the correct type and position of the banded end.

CIRCUIT BOARD MOUNTING AND WIRING

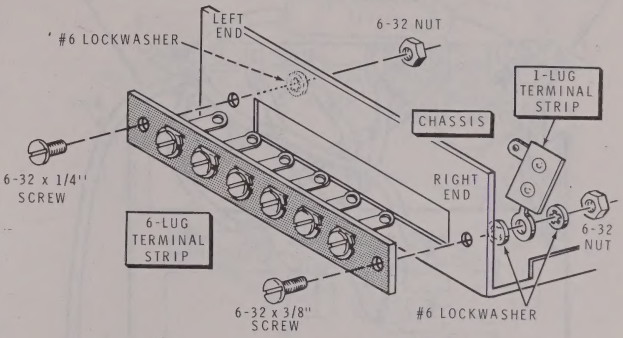
Refer to Pictorial 2-13 for the following steps.

( ) Position the chassis as shown.

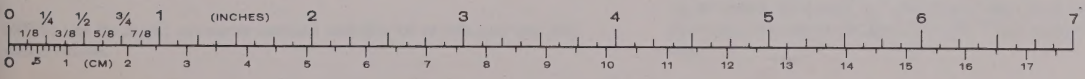
( ) Place the 6-lug terminal strip in position on the chassis. Be sure to position the terminal strip so the lugs are above the terminal strip screws.

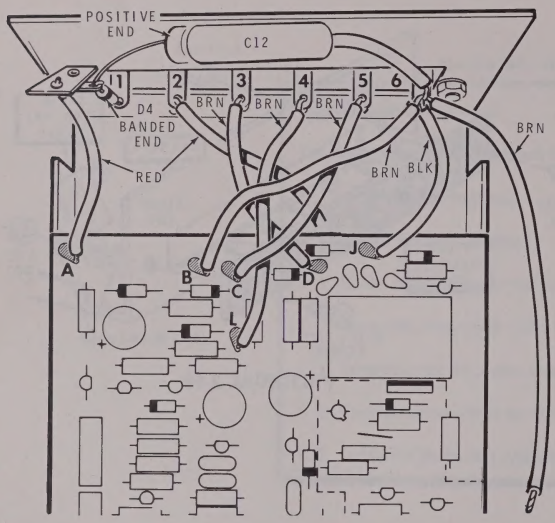
( ) At the left end of the chassis, mount the terminal strip with a 6-32 x 1/4" screw, a #6 lockwasher, and a 6-32 nut.

( ) At the right end of the chassis, mount the terminal strip and a 1-lug terminal strip with a 6-32 x 3/8" screw, two #6 lockwashers, and a 6-32 nut. Position the 1-lug terminal strip as shown. Then tighten the hardware and bend the 1-lug terminal strip as shown in the Pictorial.



PICTORIAL 2-13





PICTORIAL 2-14

Refer to Pictorial 2-14 for the following steps.

( ) Position the chassis as shown.

NOTE: In the following steps, (NS) means to not solder because other wires will be added later. "S-" with a number, such as (S-1), means to solder the connection. The number following "S" tells how many wires are at the connection.

( ) D4: Connect the unbanded end of a 1N4002 diode (#57-65) to 6-lug terminal strip lug 1 (S-1). Then connect the banded end of this diode to 1-lug terminal strip lug 1 (NS). Cut off the excess lead lengths.

( ) Position the circuit board on the chassis as shown. Then connect the wires coming from the circuit board to the terminal strips in the following steps.

( ) Connect the red wire coming from circuit board hole A to 1-lug terminal strip lug 1 eyelet (S-1).

( ) Connect the other red wire coming from the circuit board to 6-lug terminal strip lug 2 (S-1).

( ) Connect the brown wire coming from circuit board hole D to 6-lug terminal strip lug 3 (S-1).

( ) Connect the brown wire coming from circuit board hole L to 6-lug terminal strip lug 4 (S-1).

( ) Connect the brown wire coming from circuit board hole C to 6-lug terminal strip lug 5 (S-1).

( ) Connect the brown wire coming from circuit board hole B to 6-lug terminal strip lug 6 (NS).

( ) Connect the black wire coming from circuit board hole J to 6-lug terminal strip lug 6 (NS).

( ) Prepare a 7" brown wire.

( ) Connect one end of this 7" brown wire to 6-lug terminal strip lug 6 (NS). The other end of this wire will be connected later.

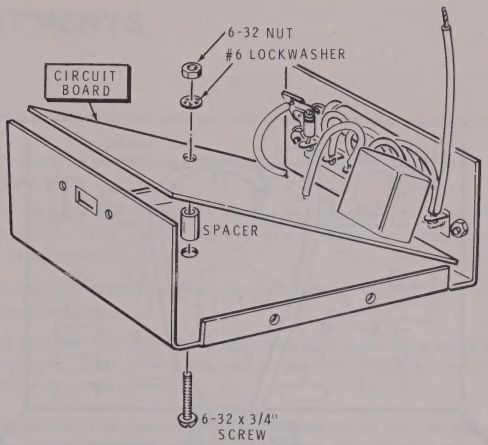
( ) Cut the lead at the positive (+) end of a 100 μF electrolytic capacitor to a length of 3/4".

( ) Remove 5/8" of insulation from the end of the roll of red wire. Save the insulation, it will be used in the next step. Cut off and discard the bare wire the insulation was removed from.

( ) C12: Slide the 5/8" length of red insulation over the long lead of the 100 μF electrolytic capacitor. Connect this lead of the capacitor to 6-lug terminal strip lug 6 (S-4). Then connect the positive (+) lead of the capacitor to 1-lug terminal strip lug 1 (S-2).

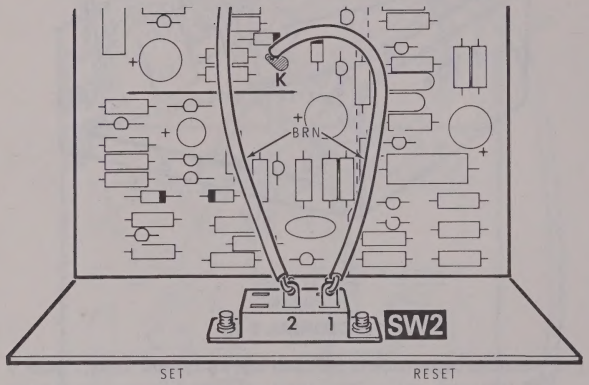
Refer to Pictorial 2-15 for the following steps.

NOTE: Use the plastic nut starter supplied with this kit to hole and start 6-32 nuts on screws.

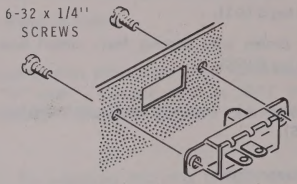


PICTORIAL 2-15

( ) Mount the circuit board to the chassis with a 6-32 x 3/4" screw, a spacer, a #6 lockwasher, and a 6-32 nut as follows: Insert the screw through chassis hole CA and slide the spacer over it. Then push the edge of the circuit board, nearest the terminal strip, under the terminal strip and back against the chassis. Be careful not to pinch the wires between the chassis and circuit board. Now push the other end of the circuit board down so the screw goes through circuit board hole CB. Then install the lockwasher and nut.



PICTORIAL 2-16



Detail 2-16A

Refer to Pictorial 2-16 for the following steps.

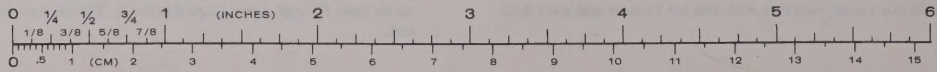
( ) Locate a slide switch and two 6-32 x 1/4" screws.

( ) SW2: Refer to Detail 2-16A and mount this slide switch at SW2 with the 6-32 x 1/4" screws as shown.

( ) Connect the brown wire coming from terminal strip lug 6 to switch SW2 lug 2 (S-1).

( ) Connect the brown wire coming from circuit board hole K to switch SW2 lug 1 (S-1).

This completes the Step-by-Step Assembly.



TEST AND ADJUSTMENTS

NOTES:

1. If you do not obtain the proper results in any of the following steps, disconnect the Alarm Unit and refer to the "In Case of Difficulty" section on Page 67 of this Manual.

2. You will need a +12-volt power source to make the following tests. You may use your car battery or a 12-volt power supply if one is available. If you use your car battery, make sure the terminals are clean before you connect the wires to them in the following steps.

Refer to Figure 1 (in the "Illustration Booklet") for the following steps.

Position the Alarm Unit as shown in Figure 1.

( ) Place SW2 in the RESET position.

( ) With a small screwdriver, turn the EXIT DELAY control (R3) fully clockwise and note the position of the control. Then turn the control fully counterclockwise. Now turn the control clockwise approximately 1/3 the rotation of the control.

( ) In the same manner, preset the ENTER DELAY control (R14).

( ) Prepare a 6" brown wire and connect one end to the "GND" screw on the Alarm Unit. Make sure the other end of this wire does not touch anything.

( ) Prepare two 2' brown wires and form a hook in one end of each wire.

( ) Connect the hooked end of one of these wires to the "GND" screw on the Alarm Unit.

( ) At the other end of this wire, remove an additional 1/2" (total 3/4") of insulation. Then connect this end to the negative (–) terminal on the battery or power supply.

( ) Connect the hooked end of the other 2' brown wire to the "+12" screw on the Alarm Unit.

( ) At the other end of this wire, remove an additional 1/2" (total 3/4") of insulation. Then connect this end to the positive (+) terminal on the battery or power supply.

( ) Locate the Tester assembly. Clip the alligator clip on the 1' brown wire to the insulation on one of the 2' brown wires. This will keep the alligator clip out of the way. It will not be used.

( ) If you performed the "#1 Sequence" steps, clip the flat-nose clip of the tester assembly to the bare wire end of the brown wire connected to the "+12" screw on the Alarm Unit.

( ) If you performed the "#2 Sequence" steps, clip the flat-nose clip of the tester assembly to the bare wire end of the brown wire connected to the "GND" screw on the Alarm Unit.

( ) Loosen the "HRN" screw on the Alarm Unit far enough to clip an alligator clip to it.

( ) Clip the alligator clip (on the 2' brown wire) from the test lamp to the "HRN" screw on the Alarm Unit.

TESTS

( ) Place RESET switch (SW2) in the SET position.

NOTES:

1. You will need a stopwatch or a wristwatch with a second hand for the following steps.

2. When you are instructed to touch a screw with the 6" brown wire, make sure you hold the wire against the screw long enough to make a good contact.

( ) With the free end of the 6" brown wire, momentarily touch screw "DEF" on the Alarm Unit. Wait 25 seconds, then touch screw "H/T." The test lamp should come on and cycle; 2 seconds on and 3 seconds off.

( ) Place RESET switch (SW2) in the RESET position. NOTE: The test lamp will go out when the switch is placed in the RESET position.

( ) Again, momentarily touch screw "DEF" with the 6" brown wire.

( ) Place RESET switch (SW2) in the SET position.

( ) Again, momentarily touch screw "DEF" with the 6" brown wire. Wait 25 seconds, then touch screw "DRS." Within a few seconds, depending on where Enter Delay control (R14) is set, the test lamp will come on and cycle as before. When the lamp comes on, start timing the lamp. It should cycle for between 2 and 2-1/2 minutes.

( ) At the end of 2 to 2-1/2 minutes, when the lamp goes off and stays off, touch screw "DRS" with the 6" brown wire. The test lamp should come on immediately.

DELAY ADJUSTMENTS

NOTE: In the following steps, you will adjust the enter and exit delay times using the tester assembly to simulate your auto horn. To increase the delay times, turn the proper control counterclockwise. To decrease the delay times, turn the proper control clockwise. Read through all the steps first, then go back and perform each one.

( ) Decide on how long of an enter delay time you want (from approximately 1 to 30 seconds). Then adjust ENTER DELAY control (R14) as follows:

1. Place RESET switch (SW2) in the RESET position.

2. Place and hold the 6" brown wire on screw "DEF." Then place RESET switch (SW2) in the SET position.

3. Remove the 6" brown wire from screw "DEF."

4. Wait 1 minute, then momentarily touch screw "DRS" with the 6" brown wire. Within a few seconds the test lamp will come on.

5. Start timing as soon as you touch screw "DRS." The elapsed time (from the moment you touch screw "DRS" until the test lamp lights) is the enter delay time.

6. Repeat steps 1 through 5 and adjust ENTER DELAY control (R14) to obtain the enter delay time you chose.

( ) Decide on how long of an exit delay time you want (from 1 to 30 seconds). Then adjust EXIT DELAY control (R3) as follows:

1. Place RESET switch (SW2) in the RESET position.

2. Place and hold the 6" brown wire on screw "DEF." Then place RESET switch (SW2) in the SET position.

3. Remove the 6" brown wire from screw "DEF" and immediately place and hold the wire on screw "H-T." Within a few seconds the test lamp will come on.

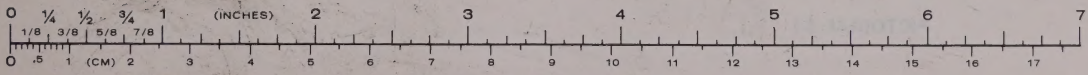
4. Start timing as soon as you remove the wire from screw "DEF." The elapsed time (from the moment you remove the wire from screw "DEF" until the test lamp lights) is the exit delay time.

5. Repeat steps 1 through 4 and adjust EXIT DELAY control (R3) to obtain the exit delay time you chose.

( ) Disconnect the test lamp wires from the Alarm Unit. Save the test lamp assembly. It will be used again later.

( ) Disconnect the two wires from the battery or power supply. Then disconnect these wires from the Alarm Unit.

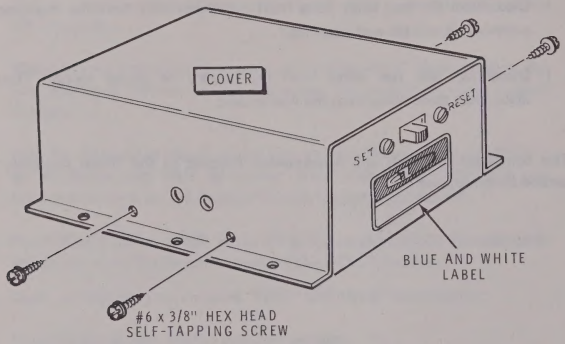
This completes the Tests and Adjustments. Proceed to the "Final Assembly" section in this Manual.



FINAL ASSEMBLY

Refer to Pictorial 3-1 for the following steps.

( ) Mount the cover to the chassis with four #6 x 3/8" hex head self-tapping screws. Make sure the side of the cover with the two large holes is mounted to the control side of the chassis.



PICTORIAL 3-1

NOTE: If you have purchased either a Model GDA-1157-1 or a Model GDA-1157-2, the blue and white labels for these kits will be installed later.

( ) Remove the backing paper from the blue and white label for the Model GD-1157. Press the label into position under RESET switch (SW2). Be sure to refer to the numbers on this label in any communications you might have with the Heath Company about this kit.

This completes the "Final Assembly."

INSTALLATION

ALARM UNIT MOUNTING

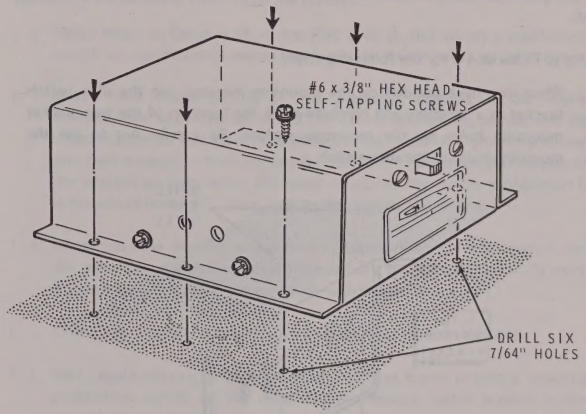
The Alarm Unit can be mounted in the trunk or any hidden location in the passenger compartment of your vehicle. However, we recommend that it be mounted in the trunk. The mounting location should be a flat surface and have room enough to allow access to the terminal strip and RESET switch SW2.

Refer to Pictorial 4-1 for the following steps.

( ) When you have decided on the mounting location, use the Alarm Unit as a template and carefully mark the location of the six Alarm Unit mounting holes on the mounting surface.

( ) Drill a 7/64" hole at each location you marked in the previous step.

( ) Mount the Alarm Unit at the prepared location with six #6 x 3/8" hex head self-tapping screws. Start all six screws in the holes you drilled; then tighten them securely.



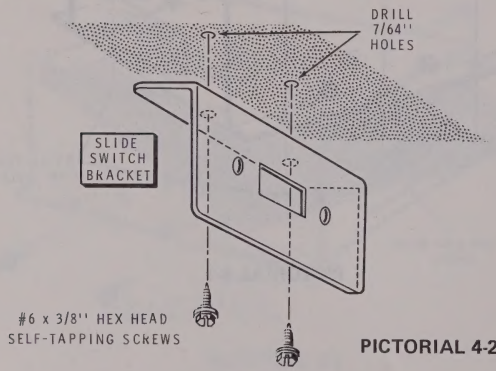
PICTORIAL 4-1

SLIDE SWITCH BRACKET MOUNTING

The slide switch bracket should be mounted in a convenient but hidden location in the passenger compartment of your vehicle. A good location is under the dash.

Refer to Pictorial 4-2 for the following steps.

( ) When you have decided on the mounting location, use the slide switch bracket as a template and carefully mark the location of the two bracket mounting holes on the mounting surface. Be careful not to use the mounting holes of the slide switch.



PICTORIAL 4-2

( ) Drill a 7/64" hole at each location you marked in the previous step.

( ) Mount the slide switch bracket at the prepared location with two #6 x 3/8" hex head self-tapping screws. Start both screws in the holes you drilled, then tighten them securely.

HOOD AND TRUNK SWITCH MOUNTING

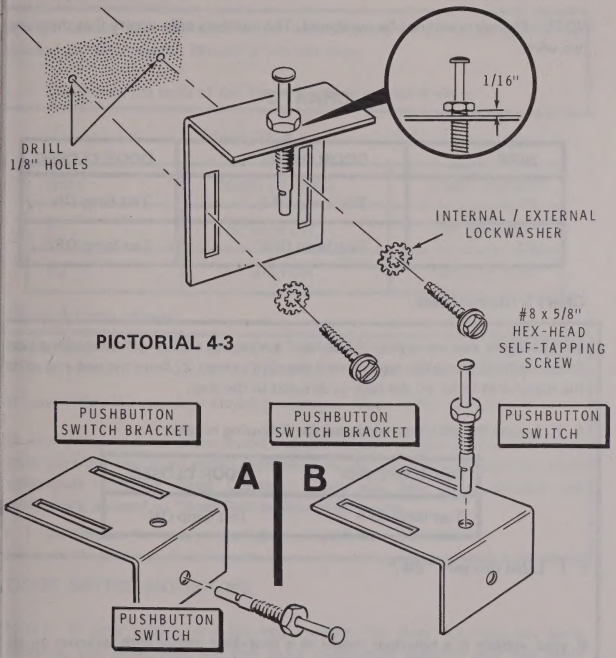
The Hood and Trunk Switches will be mounted on the pushbutton switch brackets. You can mount the switches in either of the two round holes in each bracket. Decide where you wish to mount the brackets within the trunk and engine compartment. The brackets must be mounted in locations where neither the brackets nor the switches interfere with the opening and closing of the hood or trunk lid. When closed, the hood and trunk lid must depress the switch pushbutton at least 1/4". Make sure the locations you choose are large enough to allow movement of the switches.

NOTE: The brackets will fit most vehicles. However, you may have to modify these brackets, or in an extreme case, you may have to make brackets. In such a case, make the switch mounting holes .265" in diameter.

Refer to Pictorial 4-3 for the following steps.

( ) When you have decided on a mounting location in the engine compartment, use one of the pushbutton switch brackets as a template and carefully mark the mounting surface in the center of each slot in the bracket.

( ) Drill a 1/8" hole at each location you marked in the previous step.



PICTORIAL 4-3

Detail 4-3A

NOTE: You will mount the switch to the bracket in the next step. This is a tight fit. It is a good idea to secure the bracket in a vise and use a wrench to thread the switch into the bracket. Thread the switch in the bracket until the nut portion of the switch is 1/16" from the bracket.

( ) SW3: Refer to Detail 4-3A, either Part A or B, and mount a pushbutton switch on a pushbutton switch bracket in the round hole you have chosen.

( ) Mount this Hood Switch at the prepared location in the engine compartment with two #8 x 1/2" hex head self-tapping screws, and #8 internal/external lockwashers as shown in the Pictorial. Tighten the screws just tight enough to hold the bracket in place. Then adjust the position of the bracket so that, when the hood is closed, the switch pushbutton is depressed at least 1/4". Now, tighten the screws securely.

( ) When you have decided on a mounting location for the trunk switch, use the remaining pushbutton switch bracket as a template and carefully mark the mounting surface in the center of each slot in the bracket.

( ) Drill a 1/8" hole at each location you marked in the previous step.

( ) SW4: Again refer to Detail 4-3A either Part A or B and, as before, mount a pushbutton switch on the remaining pushbutton switch bracket in the round hole you have chosen.

( ) Mount this Trunk Switch at the prepared location in the trunk with two #8 x 1/2" hex head self-tapping screws and #8 internal/external lockwashers as shown in the Pictorial. Tighten the screws just tight enough to hold the bracket in place. Then adjust the position of the bracket so that, when the trunk lid is closed, the switch pushbutton is depressed at least 1/4". Now tighten the screws securely.

DETERMINATION OF DOOR SWITCH WIRING

NOTE: If your vehicle does not have door switches, proceed to "Door Switch Mounting" on Page 51 of this Manual.

( ) Locate the door switch at the front passenger door of your vehicle.

( ) Inspect this switch. If it has only one wire going to it, and your vehicle is a two-door model or a four-door model with switches on all four doors, proceed to "Routing Wires" on Page 52 of this Manual. If your vehicle is a four-door model with switches on the front doors only, proceed to "Door Switch Mounting" on Page 51 of this Manual. If the switch at the front passenger door of your vehicle has two wires going to it, perform the following steps.

( ) Locate the tester assembly.

( ) Connect the uninsulated alligator clip on the 2' brown wire of the tester assembly to the vehicle chassis. Make sure it is a good ground connection.

NOTE: The switch will probably have a socket connected to it. The wires will be connected to this socket. In the next step, use the flat-nose clip to get to the bare wire ends of these wires.

( ) Connect the insulated flat-nose clip of the tester assembly to each wire going to the door switch, one at a time. While the clip is connected to each wire, operate the door switch by hand to simulate the door closing and opening. You will obtain the results listed in either Chart 3 or Chart 4. You will not obtain results from both charts. If you obtain the results in Chart 3, perform the steps labeled "Chart 3 Instructions." If you obtain the results in Chart 4, perform the steps labeled "Chart 4 Instructions."

NOTE: The wires will not be numbered. The numbers only signify that there are two wires.

CHART 3

WIRE	DOOR OPENED	DOOR CLOSED
#1	Test lamp OFF	Test lamp ON
#2	Test lamp OFF	Test lamp OFF

Chart 3 Instructions

NOTE: When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

( ) Locate the wire that produced the following results.

DOOR OPENED	DOOR CLOSED
Test lamp OFF	Test lamp ON

( ) Label this wire "EW."

If your vehicle is a two-door model or a four-door model with switches on all four doors, proceed to "Routing Wires" on Page 52 of this Manual.

If your vehicle is a four-door model with switches on the front doors only, proceed to "Door Switch Mounting" on this page.

( ) Disconnect the leads of the Tester assembly and set it aside.

CHART 4

WIRE	DOOR OPENED	DOOR CLOSED
#1	Test lamp ON	Test lamp ON
#2	Test lamp ON	Test lamp OFF

Chart 4 Instructions

If you obtained the results in Chart 4, you cannot use the existing door switches in your vehicle. You must use the pushbutton switches supplied with this kit.

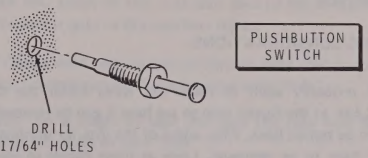
If your vehicle is a two-door model, proceed to "Door Switch Mounting."

If your vehicle is a four-door model and you want to protect all four doors, you must purchase two more pushbutton switches and two more pushbutton switch connectors from the Heath Company. Once you have these switches and connectors, proceed to "Door Switch Mounting" below.

( ) Disconnect the leads of the Tester assembly and set it aside.

DOOR SWITCH MOUNTING

NOTE: If your vehicle is a four-door model that does not have any door switches, you must purchase two more pushbutton switches and two more pushbutton switch connectors if you want to protect all four doors.



PICTORIAL 4-4

The remaining pushbutton switches (door switches) you have received will be mounted at the doors of your vehicle that do not have door switches. Each door switch must be mounted in a location where it will not interfere with the opening or closing of the door. When closed, the door must depress the switch pushbutton at least 1/4". The wires that will be connected to these switches will move when the door is opened or closed. Therefore, the mounting location you choose must be in an area large enough to allow the wires to move.

Refer to Pictorial 4-4 for the following steps.

NOTE: Perform the following steps for each door that does not already have a door switch that operates as described in the "Determination of Door Switch Wiring" section.

( ) Drill a 17/64" hole at the switch-mounting location you have chosen. If you do not have a 17/64" drill, use a 1/4" drill then file out the hole to a 17/64" diameter.

( ) SW5, SW6: Thread a pushbutton switch into the hole you drilled in the previous step. Tighten the switch securely.

ROUTING WIRES

WIRE ROUTING CONSIDERATIONS:

1. You will probably want to route the wires under the carpet in your vehicle. Look at the carpet trim to see how it can be removed and how the carpet can be pulled back. Also, some of the interior upholstery panels will probably have to be removed. Look at these panels to see how they are mounted.

2. You may have to remove the rear seat. Check the seat to see how it is mounted in your vehicle. Many rear seats can be removed if you press the seat back (to release hooks) and lift.

3. Inspect your vehicle for its existing wiring. Look for openings these wires go through from the trunk to the passenger compartment and from the passenger compartment to the engine compartment. You can route the wires you install through these same openings.

4. Keep the wires you install away from moving parts of your vehicle.

5. Keep the wires you install away from parts that get hot when your vehicle is being operated.

6. To route a wire, proceed as follows:

   A. Decide on how you are going to route the wire.

   B. Place the bundle of wire near one end of the route you have chosen.

   C. Route the wire along the path you have chosen.

   D. Press the wire down in the position you want. If necessary, temporarily tape the wire down.

   E. Make sure the wire is long enough to easily reach from one point to the other.

   F. After it has been routed, cut the wire.

7. When you are instructed to label a wire, use a 1" length of masking tape (not supplied). Wrap the tape around the wire at least 2" from the end and write the designated letter on the tape as directed in the step.

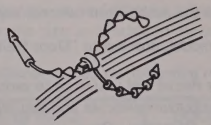


Figure 2

8. Use the cable ties to keep the wires in place permanently. Figure 2 shows how to install a cable tie.

9. In some cases you will route wires to wires already in your vehicle. Make sure these "existing wires" are #14 to #18 in size.

Refer to Pictorial 4-5 (in the "Illustration Booklet") for the following steps.

) Route a brown wire from the Alarm Unit to the trunk switch.

) Remove 1/4" of insulation from the end of this wire nearest the Alarm Unit and 3/4" of insulation from the end nearest the trunk switch. Then label both ends of this wire "T."

) Route a brown wire from the trunk switch to the hood switch.

) Remove 3/4" of insulation from each end of this wire. Then label both ends of this wire "H."

NOTES:

1. The terms "existing wire" and "existing door switch" in the following steps, refer to wires and door switches installed in your vehicle by the manufacturer.

2. If you installed door switches in your vehicle, perform the following steps under the heading "Custom Wire Routing." If you did not install door switches in your vehicle, proceed to "General Wire Routing" on Page 54.

Custom Wire Routing

NOTES:

1. If you labeled a wire "EW" in the "Determination of Door Switch Wiring" section, disregard the next step.

2. If the wire you select in the next step goes to the switch at the driver's door, make sure it goes to the courtesy light.

( ) Refer to Detail 4-5A and locate an existing wire that is connected to an existing door switch and label this existing wire "EW."

( ) Write "SW5" on a length of tape and stick the tape near the switch you installed that is nearest to wire "EW."

( ) Write "SW6" on a length of tape and stick the tape near the other door switch that you installed.

( ) Route a brown wire from wire "EW" to switch SW5.

( ) Remove 3/4" of insulation from the end of this brown wire nearest switch SW5. Label both ends of this brown wire "DE."

( ) Route a brown wire from switch SW5 to switch SW6.

( ) Remove 3/4" of insulation from each end of this wire. Label both ends of this wire DD.

( ) Route a brown wire from the Alarm Unit to door switch SW6.

( ) Remove 1/4" of insulation from the end of this wire nearest the Alarm Unit and 3/4" of insulation from the end nearest door switch SW6. Label both ends of this wire "D."

This completes "Custom Wire Routing." Proceed to "General Wire Routing."

General Wire Routing

NOTES:

1. If you installed door switches in your vehicle, disregard the following three steps.

2. If you labeled a wire "EW" in the "Determination of Door Switch Wiring" section, disregard the next step.

3. If the wire you select in the next step goes to the switch at the driver's door, make sure it goes to the courtesy light.

( ) Refer to Detail 4-5B and locate an existing wire that is connected to an existing door switch and label this existing wire "EW."

( ) Route a brown wire from wire "EW" to the Alarm Unit.

( ) Remove 1/4" of insulation from the end of this brown wire nearest the Alarm Unit. Label both ends of this wire "D."

Again, refer to Pictorial 4-5.

NOTE: In the next step, you will decide on a location under the dash to make a ground connection. Be sure the location you select is ground. The firewall is usually a good location to make a ground connection since the dash in some vehicles is nonconductive fiberglass or plastic. Even metal dashboards in some vehicles are not suitably grounded.

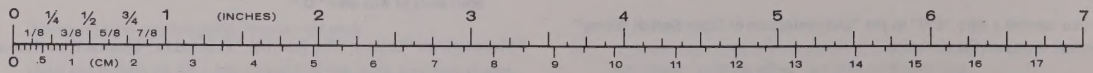
( ) Locate a screw that is a good ground location.

( ) Route a black wire from this screw to the slide switch bracket you mounted under the dash.

( ) Remove 1/4" of insulation from each end of this wire. Be careful not to cut the small wire strands when you remove the insulation. Label each end of this wire "SG."

( ) Route a brown wire from the Alarm Unit to the slide switch bracket.

( ) Remove 1/4" of insulation from each end of this wire. Label each end of this wire "S."



( ) Locate a fused, non-switched +12-volt wire as follows:

1. Make sure the vehicle ignition switch is in the OFF position.
2. Locate a wire that you think is the proper wire.
3. Scrape a small amount of insulation from this wire.
4. Connect the alligator clip on the 2' brown wire of the tester assembly to the vehicle chassis near the wire. Make sure it is a good ground connection.
5. Connect the flat-nosed clip of the tester assembly to the stripped portion of the wire you have chosen. The test lamp will come on if the wire you have chosen is the proper one.
6. Remove the fuse in your vehicle that yo think fuses the wire you have chosen. The test lamp will go out if you removed the proper fuse.
7. When you find the proper wire, label it "B+."

( ) Route a red wire from wire "B+" to the Alarm Unit.

( ) Remove 1/4" of insulation from the end near the Alarm Unit. Be careful not to cut the small wire strands when you remove the insulation. Label both ends of this wire "+12."

( ) Locate a screw, within the trunk, that is a good ground connection.

( ) Route a black wire from this screw to the Alarm Unit.

( ) Remove 1/4" of insulation from each end of this wire. Be careful not to cut the small wire strands when you remove the insulation. Label both ends of this wire "G."

NOTE: If you have purchased a Model GDA-1157-1 Siren Accessory, proceed to the "Installation" section in the Manual for that kit. If you have purchased a Model GDA-1157-2 Horn Relay, proceed to the "Installation" section in the Manual for that kit.

HORN RELAY WIRING

Refer to Pictorial 4-6 (in the "Illustration Booklet") for the following steps.

( ) Route a red wire from the Alarm Unit to the horn relay wire labeled HB.

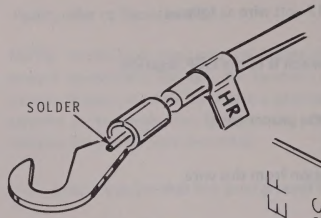
( ) Remove 1/4" of insulation from the end near the Alarm Unit and label each end of this wire HR.

( ) Refer to Detail 4-6A and install a spade lug on the Alarm Unit end of wire HR.

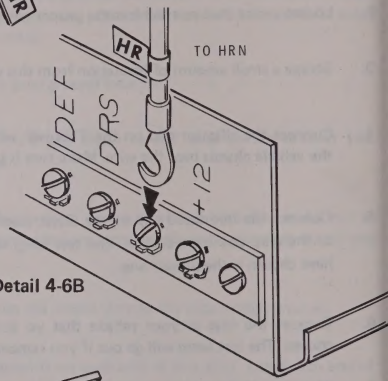
( ) Refer to Detail 4-6B and connect wire HR to screw HRN on the Alarm Unit.

( ) Refer to Detail 4-6C and connect the other end of wire HR to wire HB with an insulation-piercing connector as follows:

1. Insert the end of wire HR into hole A of the connector as far as it will go.
2. Insert wire HB into slot B of the connector. Make sure wire HR does not slip out of hole A.
3. Hold the two wires in place and, with a pair of pliers, press the metal tab down into the connector.
4. Fold the flap over the connector and, squeeze the flap until it snaps into place.



Detail 4-6A



Detail 4-6B

Detail 4-6C

ARM-DEFEAT SWITCH WIRING

Refer to Pictorial 4-7 for the following steps.

( ) Install a spade lug on the Alarm Unit end of wire S.

( ) Connect wire S to screw DEF on the Alarm unit.

( ) Locate the remaining slide switch. This switch will be referred to as switch SW1 in the following steps.

( ) Connect the other end of wire S to switch SW1 lug 2 (S-1).

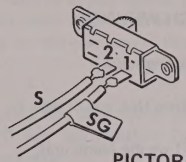
( ) Connect one end of wire SG to switch SW1 lug 1 (S-1).

( ) SW1: Refer to Detail 4-7A and mount switch SW1 to the slide switch bracket you installed earlier. Use 6-32 x 1/4" screws. Make sure the switch lugs are positioned as shown.

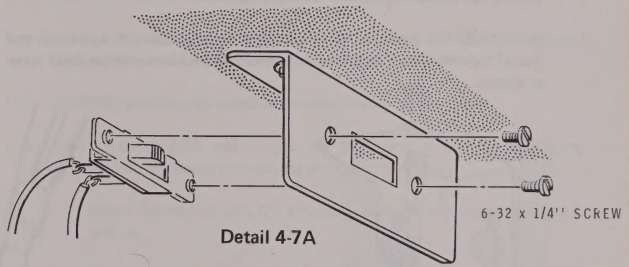
( ) Refer to Detail 4-7B and cut away a portion of a small solder lug as shown.

( ) Refer to Detail 4-7B and install this prepared solder lug on the free end of wire SG.

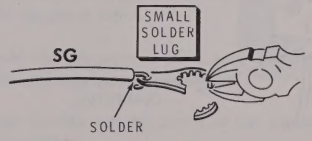
( ) Locate the screw or bolt under the dash or on the firewall that you decided on earlier as a good ground connection, and loosen it. Then slide the solder lug on wire SG under the screw (or bolt head) and retighten it.



PICTORIAL 4-7



Detail 4-7A



Detail 4-7B

HOOD AND TRUNK SWITCH WIRING

Refer to Pictorial 4-8 for the following steps.

( ) Install a spade lug on the Alarm Unit end of wire T.

( ) Connect wire T to screw H/T on the Alarm unit.

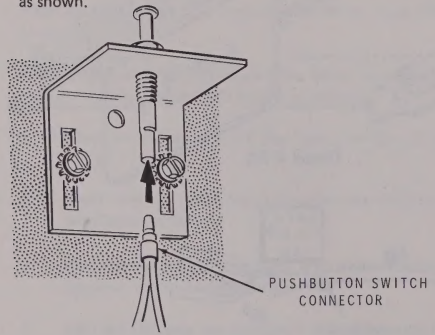
( ) Locate two pushbutton switch connectors.

( ) Refer to Detail 4-8A and twist the bare ends of wires T and H (in the trunk) together. Then install a pushbutton switch connector on these wires as shown.

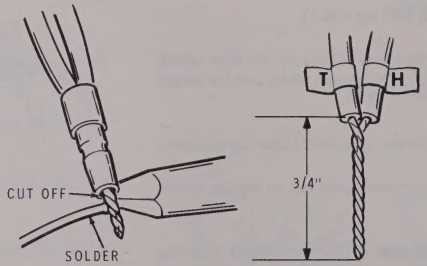
( ) Install this pushbutton switch connector in trunk switch (SW4). Push the connector into the switch until you feel it snap into place.

( ) Refer to Detail 4-8B and install a pushbutton switch connector on the other end of wire H.

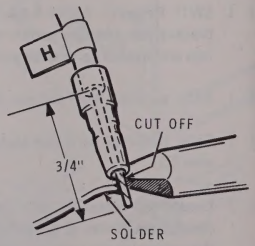
( ) Install this pushbutton switch connector in hood switch (SW3). Push the connector into the switch until you feel it snap into place.



PICTORIAL 4-8



Detail 4-8A



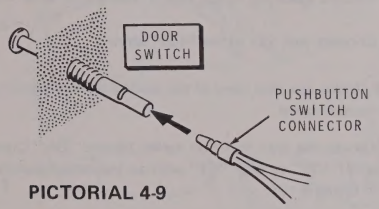
Detail 4-8B

DOOR SWITCH WIRING

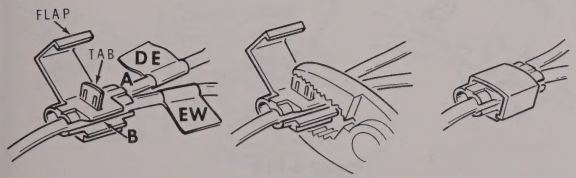
Refer to Pictorial 4-9 for the following steps.

( ) Install a spade lug on the Alarm Unit end of wire D.

( ) Connect this end of wire D to screw DRS on the Alarm unit.



PICTORIAL 4-9



Detail 4-9A

If you installed door switches in your vehicle, perform the steps under "Custom Wiring." If you did not install door switches in your vehicle, perform the steps under "General Wiring" on the next page of this Manual.

Custom Wiring

( ) At door switch DS1 (the door switch you labeled earlier), twist the bare ends of wires D and DD together. Then install a pushbutton switch connector on these wires.

( ) Install this pushbutton switch connector in door switch DS1.

( ) At door switch DS2, twist the bare ends of wires DD and DE together. Then install a pushbutton switch connector on these wires.

( ) Install this pushbutton switch connector in door switch DS2.

( ) Refer to Detail 4-9A and connect the other end of wire DE to existing wire EW with an insulation-piercing connector as follows:

1. Insert the end of wire DE into hole A of the connector as far as it will go.

2. Insert wire EW into slot B of the connector. Make sure wire DE does not slip out of hole A.

3. Hold the two wires in place, and, with a pair of pliers, press the metal tab down into the connector.

4. Fold the flap over the connector and, squeeze the flap until it snaps into place.

Proceed to "Power Wiring" on Page 60 of this Manual.

GENERAL WIRING

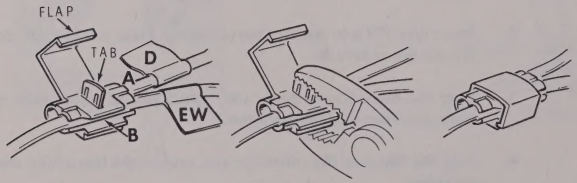
( ) Locate existing wire EW. Then refer to Detail 4-9B and connect wire D to wire EW with an insulation-piercing connector as follows:

1. Insert the end of wire D into hole A of the connector as far as it will go.

2. Insert the wire EW into slot B of the connector. Make sure wire D does not slip out of hole A.

3. Hold the two wires in place and, with a pair of pliers, press the metal tab down into the connector.

4. Fold the flap over the connector and, squeeze the flap until it snaps into place.



Detail 4-9B

POWER WIRING

( ) Place RESET switch (SW2) in the RESET position.

( ) Place ARM-DEFEAT switch (SW1) in the DEFEAT position.

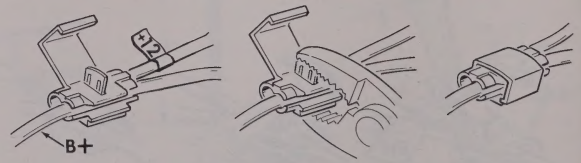
Refer to Pictorial 4-10 (in the "Illustration Booklet") for the following steps.

( ) Install a spade lug on the Alarm Unit end of wire "+12."

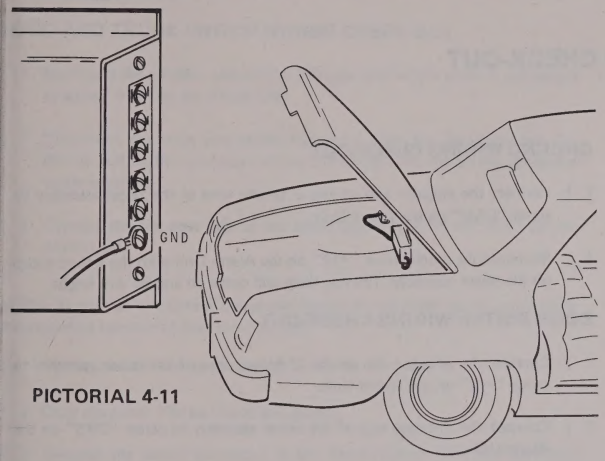
( ) Connect wire +12 to the "+12" screw.

NOTE: Make sure that none of the spade lugs connected to the Alarm Unit are touching each other.

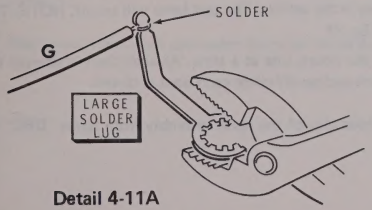
( ) Locate the wire that you earlier labeled "B+." Connect the other end of wire "+12" to wire "B+" with an insulation-piercing connector as shown in Detail 4-10A .



Detail 4-10A



PICTORIAL 4-11



Detail 4-11A

Refer to Pictorial 4-11 for the following steps.

( ) Install a spade lug on the Alarm Unit end of wire G.

( ) Connect wire G to screw "GND" on the Alarm unit.

( ) Refer to Detail 4-11A and cut away a portion of a large solder lug as shown.

( ) Install this prepared solder lug on the other end of wire G.

( ) Locate the screw or bolt in the trunk that you decided on earlier as a good ground connection, and loosen it. Then slide the solder lug on wire G under the screw (or bolt head) and retighten it.

PICTORIAL 4-12

( ) Refer to Pictorial 4-12, remove the protective paper from the warning label, and press the label on the inside of the windshield in the lower left-hand corner.

This completes the Installation. Proceed to "Installation Check-Out."

INSTALLATION CHECK-OUT

NOTE: If you do not obtain the proper results in the following steps, refer back to the "Switch Mounting," "Wire Routing," or "Wiring" portions of the "Installation" section where you installed the part of your Intrusion Alarm you are checking out.

( ) Place RESET switch (SW2) in the RESET position.

POWER WIRING CHECK-OUT

( ) Connect the alligator clip on the 2' brown wire of the tester assembly to the vehicle chassis near the Alarm Unit. Make sure it is a good ground connection.

( ) Momentarily touch screw "+12" on the Alarm Unit with the flat-nose clip. The test lamp will come on and be very bright.

( ) Disconnect the alligator clip on the 2' brown wire from the chassis.

GROUND WIRING CHECK-OUT

( ) Connect the alligator clip on the 2' brown wire of the tester assembly to screw "GND" on the Alarm Unit.

( ) Momentarily touch screw "+12" on the Alarm Unit with the flat-nose clip on the tester assembly. The test lamp will come on and be very bright.

DOOR SWITCH WIRING CHECK-OUT

( ) Connect the alligator clip on the 2' brown wire of the tester assembly to screw "+12" on the Alarm Unit.

( ) Connect the flat-nose clip of the tester assembly to screw "DRS" on the Alarm Unit.

( ) Close all of the doors in the vehicle. The test lamp will be off. NOTE: The courtesy lights must be off.

( ) Open and close all the doors, one at a time. As each door is opened the test lamp will come on and go off when each door is closed.

( ) Disconnect the flat-nose clip of the tester assembly from screw "DRS" on the Alarm Unit.

HOOD AND TRUNK SWITCH WIRING CHECK-OUT

( ) Make sure the alligator clip on the 2' brown wire of the tester is connected to screw "+12" on the Alarm Unit.

( ) Disconnect the wires and switch connector from the Trunk Switch. Do this by pulling the connector out of the switch. Do not let the connector touch anything.

( ) Connect the flat-nose clip of the tester assembly to screw "H-T" on the Alarm Unit.

NOTE: If you do not obtain the proper results in the next two steps, recheck the mounting location of the Hood Switch.

( ) Open the hood. The test lamp will come on.

( ) Close the hood. The test lamp will go off.

( ) Renistall the switch connector in the Trunk Switch. The test lamp will come on.

( ) Disconnect the switch connector from the Hood Switch.

NOTE: If you do not obtain the proper results in the next step, recheck the mounting location of the Trunk Switch.

( ) Route the tester assembly leads through the trunk jam. Then close the trunk lid. The test lamp will go off.

( ) Reinstall the switch connector in the Trunk Switch.

( ) Disconnect the flat-nose clip from screw "H-T" on the Alarm Unit.

ARM-DEFEAT SWITCH WIRING CHECK-OUT

( ) Make sure the alligator clip on the 2' brown wire of the tester assembly is connected to screw "+12" on the Alarm Unit.

( ) Connect the flat-nose clip of the tester assembly to screw "DEF" on the Alarm Unit.

( ) Place the ARM-DEFEAT switch in the DEFEAT position. The test lamp will come on.

( ) Place the ARM-DEFEAT switch in the ARM position. The test lamp will go off.

HORN WIRING CHECK-OUT

If you installed a Model GDA-1157-1 Siren Accessory, or if you used the steps under "#1 Sequence" on Page 36 of this Manual, perform the steps under "#1 Sequence" below. If you used the steps under "#2 Sequence" on Page 36 of this Manual, perform the steps under "#2 Sequence" below.

#1 Sequence

( ) Connect the alligator clip on the 2' brown wire of the tester assembly to the vehicle chassis near the Alarm Unit. Make sure the location is a good ground connection.

( ) Momentarily touch screw "HRN" on the Alarm Unit with the flat-nose clip on the tester assembly. The test lamp will come on. Also, if you have installed a GDA-1157-1 Siren Accessory, you will hear crackling noises from the siren speaker. If you have not installed the Siren Accessory, the vehicle horn may blow.

( ) Disconnect the leads of the tester assembly.

( ) Reinstall any carpet, carpet trim, seat, or upholstery panels you removed from your vehicle.

This completes the "Installation Check-Out." Proceed to the "Operation" section.

#2 Sequence

( ) Connect the alligator clip on the 2' brown wire of the tester assembly to screw "+12" on the Alarm Unit.

( ) Momentarily touch screw "HRN" on the Alarm Unit with the flat-nose clip of the tester assembly. The test lamp will come on and the vehicle horn may blow.

( ) Disconnect the leads of the tester assembly.

( ) Reinstall any carpet, carpet trim, seat, or upholstery panels you removed from your vehicle.

This completes the "Installation Check-Out." Proceed to the "Operation" section.

OPERATION

To arm your Auto Intrusion Alarm, place RESET switch (SW2) on the Alarm Unit in the SET position. Then, before you get out of your vehicle, place the dash-mounted ARM-DEFEAT switch (SW1) in the ARM position and close all doors, hood, and trunk lid. This is all that is needed to arm the Intrusion Alarm.

When you place the ARM-DEFEAT switch in the ARM position, it starts the exit-delay time. This delay gives you time enough to open your door, get out of your vehicle, and close the door. You must close all doors, the hood, and the trunk lid before the Intrusion Alarm will activate. Also, the courtesy lights must be off. Once the exit-delay time has elapsed, and all doors have been shut, the enter-delay time starts when you reopen the door. The enter-delay gives you time to get into your vehicle and place the ARM-DEFEAT switch in the DEFEAT position. If the enter-delay time elapses before you place the switch in the DEFEAT position, the Alarm will sound (on and off) for a 2 to 2-1/2-minute period. When the Alarm sounds, the only way it can be turned off is to place the RESET switch on the Alarm Unit in the RESET position. NOTE: You must also place the ARM-DEFEAT switch in the DEFEAT position.

At the end of 2 to 2-1/2 minutes, the Intrusion Alarm will shut off, but remain armed so that when anyone opens a door, the Alarm will come back on immediately. This will let you know that the Intrusion Alarm has been activated. At any time when the Alarm Unit is armed, the Alarm will sound immediately if either the hood or trunk is opened.

DELAY TIMES READJUSTMENTS

( ) Readjust the exit time delay, if desired, as follows:

1. Place ARM-DEFEAT switch (SW1) in the DEFEAT position.

2. Place RESET switch (SW2) in the RESET position then back in the SET position.

3. Close all doors, hood, and trunk lid completely and make sure the courtesy lights are off.

4. Open the hood or trunk lid; then proceed to step #5. NOTE: If you did not install a hood or trunk switch, connect the alligator clips of the tester assembly as follows before you proceed:

   clip on 2' brown wire to screw "H-T."

   clip on 1' brown wire to screw "GND."

5. Immediately place ARM-DEFEAT switch (SW1) in the ARM position and start timing. Within a few seconds, the Alarm will come on. The elapsed time (from when the ARM-DEFEAT switch is placed in the ARM position until the Alarm comes on) is the exit delay time.

6. Disconnect the tester assembly (if used).

7. Repeat steps 1 through 6 and adjust EXIT DELAY control (R3) for the exit delay time you chose.

( ) Readjust the enter delay time, if desired, as follows:

1. Place ARM-DEFEAT switch (SW1) in the DEFEAT position.

2. Place RESET switch (SW2) in the RESET position then back to the SET position.

3. Close the hood and trunk lid.

4. Place ARM-DEFEAT switch (SW1) in the ARM position and close all doors completely and make sure the courtesy lights are off.

5. Wait 1 minute then open a door and start timing. Within a few seconds, the Alarm will come on. The elapsed time (from when the door is opened until the Alarm comes on) is the enter delay time.

6. Repeat steps 1 through 5 and adjust ENTER DELAY control (R14) for the enter delay time you chose.

IN CASE OF DIFFICULTY

This section of the Manual is divided into two parts. This first part, titled "General," describes what to do about any difficulties that might occur right after the unit is assembled. The second part, titled "Troubleshooting Chart," lists a number of possible difficulties that could arise. It also lists the possible causes of these difficulties.

GENERAL

The following paragraphs deal with the types of difficulties that may show up right after the kit is assembled, before you can put it into operation. These difficulties are most likely to be caused by assembly errors or faulty soldering. The following checks will help you locate any error of this type.

NOTE: Refer to the "X-Ray View" on Page 74 for the physical location of parts.

1. It is frequently helpful to have a friend check your work. Someone who is not familiar with the unit may notice something you consistently overlook.

2. About 90% of the kits that are returned for repair, do not function properly due to poor connections and soldering. Therefore, many troubles can be eliminated by reheating all connections to make sure that they are soldered as described in the "Soldering" section of the "Kit Builders Guide."

3. Check the values of the parts. Be sure the proper part has been wired into the circuit at each location as shown in the Pictorials and as called out in the wiring instructions.

4. Check for bits of solder, wire ends, or other foreign matter which may be lodged in the wiring or between the foils on the circuit board.

5. If, after careful checks, the trouble is still not located and a voltmeter is available, check voltage readings against those shown on the Schematic Diagram (in the "Illustration Booklet") or the "X-Ray Views" on Page 74. NOTE: All voltage readings were taken with a high input impedance voltmeter. Voltages may vary as much as ±20%.

6. Check the transistors with a transistor tester, or by substitution of transistors of the same types known to be good.

7. A review of the "Circuit Description" may also help you find the trouble.

NOTE: In an extreme case where you are unable to resolve a difficulty, refer to the "Customer Service" information inside the rear cover of the Manual. Your Warranty is located inside the front cover.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE
Alarm unit completely dead.	1. Battery connections. 2. Alarm unit terminal strip connections. 3. Zener diode ZD3, diodes D4 or D10, or transistor Q1 incorrectly installed. 4. C3 or C5 incorrectly installed.
Only hood and trunk switches turn Alarm on.	1. Diode D1 incorrectly installed.
Hood and trunk switches turn Alarm on, but, Alarm will not stay on.	1. Diodes D1 or D2 incorrectly installed. 2. Transistors Q1 or Q5 incorrectly installed or defective.
Hood and trunk switches turn Alarm on, but there is a delay.	1. Diodes D1 or D7 incorrectly installed.
Only door switches turn Alarm on.	1. Diode D2 incorrectly installed.
Alarm turns on but does not turn off after 2 - 2-1/2 minutes.	1. Capacitor C9 incorrectly installed. 2. Transistors Q11 or Q17 defective.
Alarm can be turned off with ARM-DEFEAT switch.	1. Diode D6 incorrectly installed.

SPECIFICATIONS

Input Voltage	12 VDC. Can only be used on negative ground systems.
Current	Set and Armed: 28 milliamperes (approximately).
Triggered	
GD-1157	Depends on horn relay and horn(s).
GDA-1157-1	375 milliamperes (approximately).
GDA-1157-2	350 milliamperes plus horn current.
Alarm Device	Auto horn or optional Siren Accessory.
Exit and Enter Delay Range	Adjustable from 1 to 30 seconds.
Duty Cycle	2 seconds on, 3 seconds off.
Temperature Range	-20°C to 60°C. -4°F to 140°F.

Controls	Internal: Exit delay and Enter delay. External: Arm-Defeat switch and Reset switch.
Dimensions	5-1/4" long x 5-5/8" wide x 2" high.
Weight	2 lbs.

The Heath Company reserves the right to discontinue products and to change specifications at any time without incurring any obligation to incorporate new features in products previously sold.

CIRCUIT DESCRIPTION

Refer to the Schematic (in the "Illustration Booklet") while you read this Circuit Description.

The Auto Intrusion Alarm consists of eight circuits. These circuits are: Regulator, Exit Delay, Latch, Enter Delay, Delay Bypass, Duty Cycle, Timer, and Relay Driver. Each circuit will be explained separately on the following pages.

REGULATOR

The regulator circuit consists of resistor R2, capacitor C2, diodes D4 and ZD3, and transistor Q1. The regulator circuit provides voltage regulation and transient suppression.

A positive 12 volts from your vehicle's electrical system is coupled through diode D4 to the collector of transistor Q1. Zener diode ZD3 regulates Q1 to produce a constant voltage at its emitter. Resistor R2 provides bias current for ZD3. Capacitor C2 and diode D4 provide transient suppression. The constant voltage at the emitter of Q1 is supplied to the remaining circuits of the Intrusion Alarm.

EXIT DELAY

The exit delay circuit consists of DEFEAT switch SW1, Exit Delay control R3, resistors R4, R5, R7, and R8, capacitor C5, and transistors Q2 and Q3. This circuit provides you with a time delay so you can "arm" the Intrusion Alarm and have time to get out of your vehicle and close the door.

When Arm-Defeat switch SW1 is placed in the ARM position, resistor R5 is disconnected from ground. With R5 ungrounded, capacitor C3 starts charging through Exit Delay control R3 and resistor R4. The position of control R3 determines the rate at which C3 charges. When the voltage across C3 reaches a value of the bias voltage of transistor Q2, plus the value of voltage dropped across diodes D5 and D6, Q2 turns on. The bias voltage of Q2 is determined by resistors R7 and R8. When Q2 is turned on, transistor Q3 is turned on and voltage is supplied to the remaining circuits.

LATCH

The latch circuit consists of capacitors C1 and C4, transistors Q4 and Q5, and resistors R9, R11, R12, and R15. This circuit keeps the Intrusion Alarm off until someone opens the hood, the trunk, or a door.

Voltage is supplied to transistors Q4 and Q5 from transistor Q3. However, Q4 and Q5 stay turned off until capacitor C1 is grounded by closing either the hood switch (SW3), trunk switch (SW4), or any door switch. When C1 is momentarily grounded, Q5 is turned on which turns Q4 on. With Q4 on, Q5 will remain on even when Ci is ungrounded. Q4 and Q5 will remain turned on until Q3 is turned off. When Q5 is on it supplies voltage to the enter-delay circuit.

ENTER DELAY

The enter delay circuit consists of RESET switch SW2, Enter Delay control R14, resistors R6, R13, R17, R19, and R21, transistors Q7 and Q8, diode D6, and capacitor C5. This circuit allows you time to enter your vehicle and disarm the Intrusion Alarm.

The enter-delay circuit is similar to the exit delay circuit. When SW2 is placed in the SET position, resistor R17 is disconnected from ground. With R17 ungrounded, capacitor C5 starts charging through resistor R13 and Enter Delay control R14. The position of control R14 determines the rate at which C5 charges. When the voltage across C5 reaches a value equal to the bias voltage of transistor Q7, plus the value of the base to emitter voltage drop of Q7, Q7 turns on. The bias voltage of Q7 is determined by resistors R19 and R21. When Q7 turns on, it turns Q8 on. When Q8 is on, a portion of the collector current is coupled to the duty cycle circuit. The remaining current at its collector current is coupled through resistor R6 and diode D6 to the base of transistor Q2. This feedback current keeps Q2 turned on when the Arm-Defeat switch is in either position. When Q2 is turned on, the alarm sounds and the only way the Intrusion Alarm can be turned off is with the RESET switch.

DELAY BYPASS

The delay bypass circuit consists of resistors R16 and R18, diode D7, and transistor Q6. This circuit bypasses the exit delay and enter delay circuits when either the hood or trunk is opened.

When either hood switch SW3 or trunk switch SW4 is closed, diode D7 is grounded. This causes transistor Q6 to turn on. With Q6 on, voltage is coupled to the base of transistor Q7, through capacitor C5 which turns the latch circuit on. With the latch circuit on, Q7 will remain on if the hood or trunk switches are opened.

DUTY CYCLE

The duty cycle circuit consists of resistors R22, R23, R24, and R25, capacitors C6, C7, and C8, diodes D8 and D9, and transistors Q9 and Q10. This circuit provides a 2 seconds on, 3 seconds off signal to the relay drive circuit.

The duty cycle circuit is a free-running multivibrator. The rate at which the multivibrator operates is determined by the RC time constant of resistor R23 and capacitor C6 and the RC time constant of resistor R24 and capacitor C8. The signal from the multivibrator is direct coupled from the emitter of transistor Q10 to the relay driver circuit.

TIMER

The timer circuit consists of resistors R29, R31, R32, R33, R34, R35, R36, R37, R38, and R39, capacitors C9 and C11, diodes D12 and D13, and transistors Q13, Q14, Q15, Q16, and Q17. This circuit determines the length of time the Intrusion Alarm operates once it comes on.

When resistor R29 is grounded by either the hood or trunk switch, or any door switch, transistor Q13 is turned on. When Q13 turns on, it turns transistor Q14 on which turns transistors Q15, Q16, and Q17 off. When transistor Q17 turns off, it holds Q14 turned on through R38 and D13. This circuit is held off for a period of time which is determined by the RC time constant of resistor R35 and capacitor C9. At the end of the delay time, transistors Q15, Q16, and Q17 are turned on. The output signal from the collector of Q17 is coupled through resistor R38 and diode D13 to the base of Q14, which turns Q14 off. The remainder of the signal from Q17 is coupled to the relay driver circuit.

RELAY DRIVER

The relay driver circuit consists of resistors R26, R27, and R28, diodes D10 and D11, transistors Q11 and Q12, and relay RY1. This circuit drives the relay in response to the signals from the duty cycle and timer circuits.

The signal from the timer circuit turns transistor Q11 on and allows the signal from the duty cycle circuit to turn transistor Q12 on and off. Transistor Q12 then applies and removes voltage to the coil of relay RY1. Resistor R28 protects Q12 from inductive feedback from the coil of RY1. Diode D10 protects Q12 from negative voltage transients. Diode D11 suppresses contact arcing so the relay contacts will not "bounce."

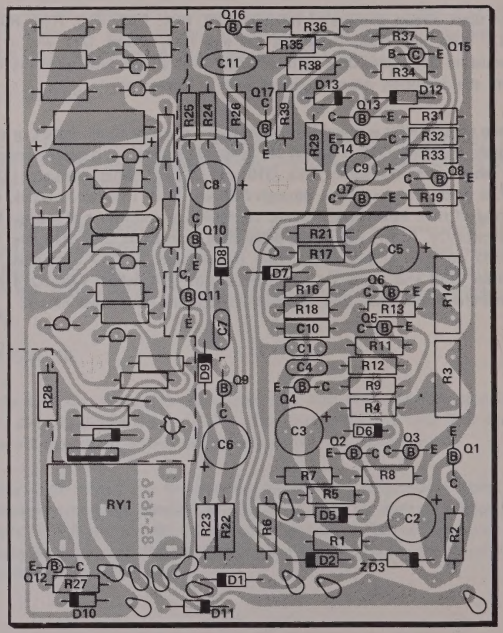
CIRCUIT BOARD X-RAY VIEW

NOTE: To find the PART NUMBER of a component for the purpose of ordering a replacement part:

A. Find the circuit component number (R5, C3, etc.) on the "X-Ray View."

B. Locate this same number in the "Circuit Component Number" column of the "Parts List."

C. Adjacent to the circuit component number, you will find the PART NUMBER and DESCRIPTION which must be supplied when you order a replacement part.



(Viewed from component side)

EXPEDITED PARTS ORDER FORM

(FOR REPAIR PARTS ONLY)

PLEASE DO NOT WRITE IN THIS SPACE

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

SEND TO: **HEATH COMPANY**
BENTON HARBOR,
MICHIGAN 49022
ATTN PARTS REPLACEMENT

KIT MODEL	PURCHASE DATE	INVOICE NUMBER	LOCATION PURCHASED

QTY.	HEATH PART NUMBER	DESCRIPTION OF PART	PRICE	TOTAL PRICE	DESIRED METHOD OF SHIPMENT
					EDITORS INITIALS

INSTRUCTIONS:

- INCLUDE CHECK OR MONEY ORDER FOR TOTAL PARTS ORDERED ADD 10% (MINIMUM $0.25) FOR INSURANCE, POSTAGE AND HANDLING.
- AUTHORIZE PERMISSION FOR C.O.D. SHIPMENT (MINIMUM ORDER SHIPPED C.O.D. IS $10.00).
- MICHIGAN RESIDENTS ADD 4% SALES TAX

C.O.D. AUTHORIZATION

_____
SIGNED

THIS FORM IS FOR U.S. CUSTOMERS ONLY. OVERSEAS CUSTOMERS SEE YOUR DISTRIBUTOR.

CUSTOMER SERVICE

REPLACEMENT PARTS

If you need a replacement part, please fill in the Parts Order Form that is furnished and mail it to the Heath Company. Or, if you write a letter, include the:

- **Part number** and **description** as shown in the **Parts List.**
- Model number and Series number from the blue and white label.
- Date of purchase..
- Nature of the defect.

Please do not return parts to the factory unless they are requested. Parts that are damaged through carelessness or misuse by the kit builder will not be replaced without cost, and will not be considered in warranty.

Parts are also available at the Heathkit Electronic Centers listed in your catalog. Be sure to provide the Heath part number. Bring in the original part when you request a warranty replacement from a Heathkit Electronic Center.

NOTE: Replacement parts are maintained specifically to repair Heathkit products. Parts sales for other reasons will be declined.

TECHNICAL CONSULTATION

Need help with your Heathkit? . . . . Self-Service? . . . . Construction? . . . .Operation? . . . .Call or write for assistance. You'll find our Technical Consultants eager to help with just about any technical problem except "customizing" for unique applications.

The effectiveness of our consultation service depends on the information you furnish. Be sure to tell us:

- The Model number and Series number from the blue and white label.
- The date of purchase.
- An exact description of the difficulty.
- Everything you have done in attempting to correct the problem.

Also include switch positions, connections to other units, operating procedures, voltage readings, and any other information you think might be helpful.

Please do not send parts for testing, unless this is specifically requested by our Consultants.

Hints: Telephone traffic is lightest at midweek. . .please be sure your Manual and notes are on hand when you call.

Heathkit Electronic Center facilities are also available for telephone or "walk-in" personal assistance.

REPAIR SERVICE

Service facilities are available, if they are needed, to repair your completed kit. (Kits that have been modified, soldered with paste flux or acid core solder, cannot be accepted for repair.)

If it is convenient, personally deliver your kit to a Heathkit Electronic Center. For warranty parts replacement, supply a copy of the invoice or sales slip.

If you prefer to ship your kit to the factory, attach a letter containing the following information directly to the unit:

- Your name and address.
- Date of purchase.
- Copies of all correspondence relevant to the service of the kit.
- A brief description of the difficulty.
- Authorization to return your kit C.O.D. for the service and shipping charges. (This will reduce the possibility of delay.)

Check the equipment to see that all screws and parts are secured. (Do not include any wooden cabinets or color television picture tubes, as these are easily damaged in shipment.) Place the equipment in a strong carton with at least THREE INCHES of *resilient* packing material (shredded paper, excelsior, etc.) on all sides. Use additional packing material where there are protrusions (control sticks, large knobs, etc.). If the unit weighs over 15 lbs., place this carton in another one with 3/4" of packing material between the two.

Seal the carton with reinforced gummed tape, tie it with a strong cord, and mark it "Fragile" on at least two sides. Remember, the carrier will not accept liability for shipping damage if the unit is insufficiently packed. Ship by prepaid express, United Parcel Service, or insured Parcel Post to:

Heath Company
Service Department
Benton Harbor, Michigan 49022

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